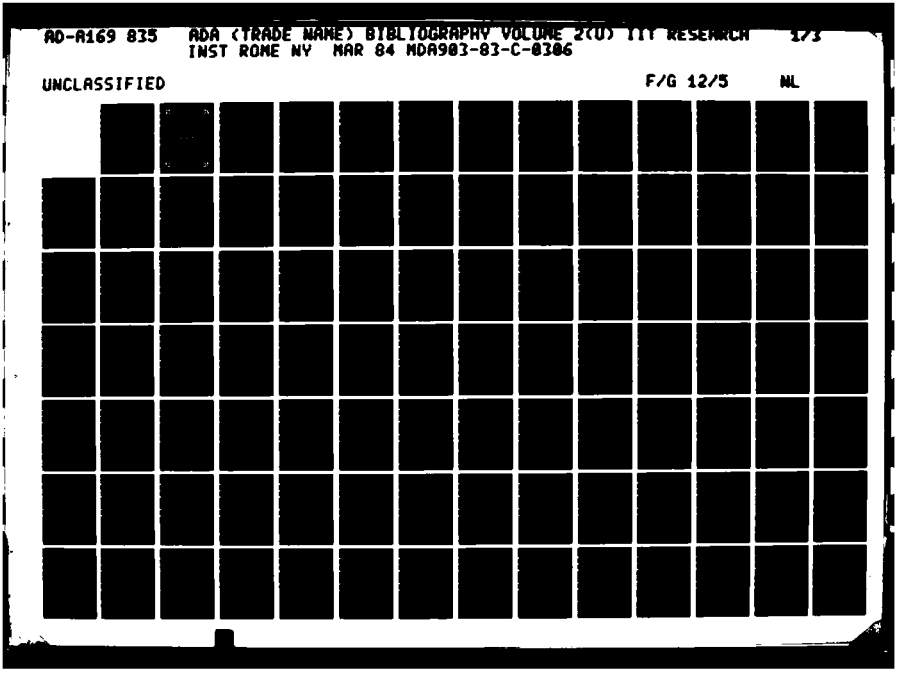
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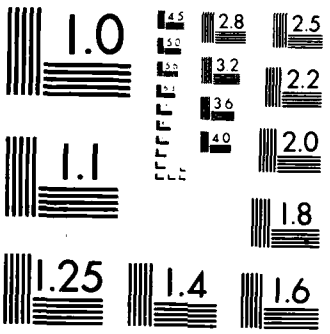
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June 1983 – March 1984

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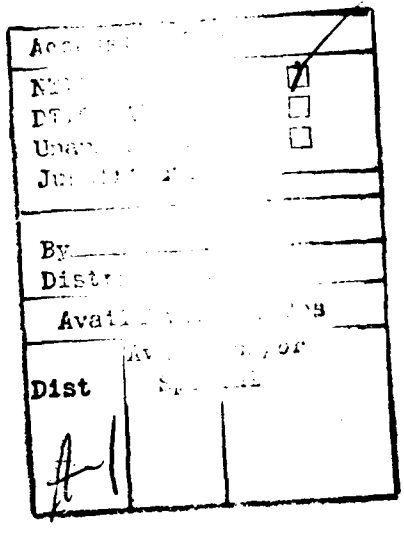
VOLUME II

June 1983 - March 1984



Prepared for:

Ada Joint Program Office
9th floor
400 Army - Navy Drive
Arlington, VA 22202

Prepared by:

IIT Research Institute
199 Liberty Plaza
Rome, NY 13440

This document was produced under contract MDA903-83-C-0306 for the Ada Joint Program Office.

Table of Contents

1. INTRODUCTION

The Ada Joint Project Office (AJPO) manages DoD's effort to provide life-cycle support for Ada, DoD's common high-order language for computer systems, by: (1) coordinating the development and introduction of Ada, Ada Program Support Environments (APSE), and policies and methodologies regarding their use, (2) ensuring the maintenance of the language as a consistent, unambiguous standard, (3) providing education and training in the use of Ada for DoD and other Government agency personnel so that adequate human resources will exist to support the Ada program and (4) encouraging the use of Ada by the software development community.

The Ada Information Clearinghouse* (AdaIC) is a function of the AJPO which coordinates the collection, integration and dissemination of information on all aspects of Ada, and associated aspects of DoD's Software Initiative. As part of this effort, the AdaIC has prepared this, the second volume** of the Ada Bibliography.

The bibliography contains citations for documents pertaining to the history, development, progress and use of the Ada language. It also contains comprehensive author and subject indices which provide a cross reference to the appropriate document citation. The citations in this volume represent all documents added to the Ada Bibliographic Database since the publication of Volume I in May 1983.

* The Ada Information Clearinghouse (AdaIC) is operated by IIT Research Institute for the Ada Joint Program Office (AJPO).

** Ada Bibliography Volume I is available for $30.00 prepaid from:
Data & Analysis Center for Software
RADC/ISISI
Griffiss AFB, NY 13441

Please make checks payable to IITRI/DACS.

2. EXAMPLES

EXAMPLE DOCUMENT CITATION

(1) (2) (3)

DOCUMENT NUMBER: 8123 DOCUMENT DATE: 10/80 TYPE: PAPER

ADA LANGUAGE PROGRAMMING (4)

DOE, JOHN (5) (6) (7) (8) (9) (10)

COMPUTER SCIENCE MAGAZINE, VOL 1, ISSUE 1, PP. 21-30, 3/1/84

PUBLISHER: EAGLE CREST PRINTING, CITYTOWN, 1983

(11) (12) (13)

This paper discusses the emergence of Ada* and presents an overview of the language. The paper highlights capabilities that do not exist in most major languages and briefly discusses the development of the Ada Programming Support Environment (APSE). (*Ada is a trademark of the U.S. Department of Defense). (14)

INDEX TERMS (15)

DATA TYPES LANGUAGE STRUCTURE

AVAILABLE FROM: THE AUTHOR (16)

ORDER NUMBER: A-1 (17)

REPORT NUMBER: 1234-ABC (18)

SPONSORS: U.S. DEPARTMENT OF DEFENSE (19)

EXAMPLE AUTHOR INDEX CITATION

(20)

DOE, JOHN, AFFILIATED RESEARCH CORPORATION, CITYTOWN, USA

8123-2 ADA LANGUAGE PROGRAMMING

(21)

EXAMPLE SUBJECT INDEX CITATION

DATA TYPES

2492-1 2681-1 2916-1 3251-1 3264-1 3271-1 3273-1 3299-1 3301-1 3302-1
3304-1 3307-1 3316-1 3321-1 3360-1 3361-1 3363-1 3364-1 3377-1 3385-1
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3418-1 3424-1 3435-1 3437-1 3441-1 3450-1 3454-1 3461-1 3463-1 3613-1
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4686-2 4788-2 4789-2 8123-2

DATA ITEM	DESCRIPTION
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4. TITLE	The complete title of the document.
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6. JOURNAL	The title of the journal in which the article appeared.
7. VOLUME	The volume number of the journal in which the article appeared.
8. ISSUE NUMBER	The issue number of the document.
9. PAGE(S)	If the document is self-contained, pagination is shown as a single number and denotes the length of the document. If an article is part of a larger document pagination is shown as a range, indicating the starting and ending page.
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11. PUBLISHER	The name of the publisher.
12. CITY AND STATE	The city and state where the publisher is located.
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15. INDEX TERMS	The terms used to categorize the document.
16. AVAILABLE FROM	The organization that distributes the document.
17. ORDER NUMBER	The number assigned by the distriuting organization.
18 REPORT NUMBER	A number assigned by the organization that produced the document.
19. SPONSOR(S)	The organization sponsoring the research contract or grant for which the document was produced.
20. ORGANIZATION	The author's affiliation at the time the document was written.
21. VOLUME NUMBER	The volume of the Ada Bibliography in which the document citation appears.

Please note that the journal name, volume number, issue number and date issued are printed only if the article appeared as part of a larger document. In addition, not all of these items are available for every journal. The publisher information appears if the document is a textbook.

3. DOCUMENT CITATIONS

DOCUMENT NUMBER: 3245 DOCUMENT DATE: 09/82 TYPE: TECHNICAL REPORT

DESIGN OF AN INTELLIGENT PROGRAM EDITOR

SHAPIRO, DANIEL G.; MCCUNE, BRIAN P.; WILSON, GERALD A.

This report discusses results of a project to develop a functional design for and assess the feasibility of an intelligent program editor for Ada* and other programming languages. Feasibility of the program editor is demonstrated by a functional design and an initial implementation of the multiple knowledge bases representing a small program and a search (query) mechanism that uses them. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

EDITORS ARTIFICIAL INTELLIGENCE KNOWLEDGE BASED SYSTEMS
SOFTWARE TOOL SYSTEMS

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: AD A120 319
REPORT NUMBER: TR 3023-1

SPONSORS: OFFICE OF NAVAL RESEARCH,QUINCY ST.,ARLINGTON,VA 22217

DOCUMENT NUMBER: 3337 TYPE: PAPER

A STYLE GUIDE AND DOCUMENTATION STANDARD FOR THE PROGRAMMING LANGUAGE ADA

ABBOTT, R.J.
SOFTWARE ENG STANDARDS APPLICATIONS WORKSHOP, PROCEED, PP. 108-114, 08/20/81

This paper summarizes work on a style guide and documentation standard for Ada*. The capabilities and advantages of the Ada language are first discussed. Finally, examples are given that demonstrate two of the primary goals of Ada: abstract specifications and package integrity. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

STANDARDS HIGHER-ORDER LANGUAGES DOCUMENTATION
REUSABILITY

AVAILABLE FROM: IEEE SERVICE CENTER,445 HOES LA,PISCATAWAY,NJ 08854
ORDER NUMBER: 81CH1633-7

DOCUMENT NUMBER: 3426 DOCUMENT DATE: 12/81 TYPE: TECHNICAL REPORT

ADA INTEGRATED ENVIRONMENT I: DESIGN RATIONALE

STAFF AUTHOR, INTERMETRICS,INC.,CAMBRIDGE,MA 02138

This report describes the rational of the design for a minimal Ada* Program Support Environment (MAPSE). The MAPSE tools described in this report include an Ada compiler, linker/loader,debugger, editor, and configuration management tools. The report also describes the kernel Ada programming Support Environment (KAPSE) that will provide the interfaces (user, host, tool), database support, and facilities for executing Ada programs (runtime support system). (* Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS	DESIGN	PROGRAMMING AIDS
COMPILERS	ARCHITECTURE	EDITORS
KERNEL	DATABASE MANAGEMENT SYSTEMS	
PROGRAM LIBRARY SYSTEMS	CONFIGURATION MANAGEMENT	
MANAGEMENT TOOLS AND TECHNIQUES		

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: AD A109 746
REPORT NUMBER: RADC-TR-81-357

SPONSORS: ROME AIR DEVELOPMENT CENTER, GAFB, ROME, NY 13441

DOCUMENT NUMBER: 3431 DOCUMENT DATE: 06/20/78 TYPE: TECHNICAL REPORT

PROCEEDINGS OF THE IRVINE WORKSHOP ON ALTERNATIVES FOR THE ENVIRONMENT, CERTIFICATION, AND CONTROL OF THE DOD COMMON HIGH ORDER LANGUAGE

STANDISH, THOMAS A.

This document contains edited transcripts and some position papers presented at a Workshop on Alternatives for the Environment, Certification, and Control of the Department of Defense High Order Language Ada*. Topics discussed include the following: (1) experience in language standardization, (2) technology for language specification, (3) verification technology, (4) compile time tools (5) supporting a programming language culture, (6) requirements analysis, (7) system design, (8) program documentation, (9) maintenance, (10) program development systems, and (11) test and measurement. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

REQUIREMENTS ANALYSIS	SYSTEM DESIGN	PROGRAM MAINTENANCE
DOCUMENTATION	TESTING	EDUCATION
DEBUGGING	STANDARDIZATION	VERIFICATION
COMPILERS	VALIDATION	

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
REPORT NUMBER: CS-78-143

SPONSORS: U.S.ARMY RESEARCH OFFICE

DOCUMENT NUMBER: 3483 TYPE: PAPER

RECOMMENDED: A MINIMUM STANDARD SOFTWARE TOOLSET

GLASS, ROBERT L.
6TH INT'L CONF ON SOFTWARE ENGINEERING: POSTER SESSION, PP. 41-42, 09/16/82

This paper asserts that what is needed is a Minimum Standard Software Toolset which is available to all professional programmers in all workplaces. The functional content of such a toolset is proposed, based heavily on the work of the U.S. Department of Defense in its Ada* Programming Support Environment. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS	STANDARDIZATION

AVAILABLE FROM: IEEE SERVICE CENTER,445 HOES LA,PISCATAWAY,NJ 08854

DOCUMENT NUMBER: 3486 TYPE: PAPER

EXPERIENCE IN PERFORMING SOFTWARE QUALITY ASSURANCE ON THE ADA LANGUAGE SYSTEM PROJECT

RAKITIN, STEVEN R.
6TH INT'L CONF ON SOFTWARE ENGINEERING: POSTER SESSION, PP. 49-50, 09/16/82

This paper discusses Softech's experience in performing software quality assurance and software configuration management practices on the Ada* Language System (ALS) project. An explanation of the functions of the quality assurance staff is given. Then, the implementation of software configuration management is described. Finally, the objectives of a software development environment are reviewed. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

QUALITY ASSURANCE SOFTWARE TOOL SYSTEMS CONFIGURATION MANAGEMENT

SPONSORS: U.S.ARMY. CENTACS,ECOM,FT.MONMOUTH,NJ 07703

DOCUMENT NUMBER: 3607 DOCUMENT DATE: 10/82 TYPE: TECHNICAL REPORT

ADA METHODOLOGIES: CONCEPTS AND REQUIREMENTS

DEPT. OF DEFENSE

This document rationalizes the need for the use of coherent software development methodologies in conjuction with the Ada* programming language and the Ada Programming Support Environments (APSE's) and describes the characteristics that such methologies should possess. Emphasis is given to the process by which software is developed for Ada applications, not just with the language or its automated support environment. The document also identifies requirements for software development methodologies, as was done in the sequence of documents leading to the "Steelman" and "Stoneman" reports. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS DEVELOPMENTAL METHODOLOGIES
FUNCTIONS SPECIFICATIONS IMPLEMENTATION
VALIDATION VERIFICATION
MANAGEMENT TOOLS AND TECHNIQUES DEVELOPMENTAL PROCESS
CONFIGURATION MANAGEMENT

AVAILABLE FROM: ADA PROGRAM OFFICE, 801 N. RANDOLPH ST, ARLINGTON,VA

DOCUMENT NUMBER: 3812 TYPE: JOURNAL ARTICLE

THE SYNTAX OF USER-DEFINED DYADIC OPERATORS

FISHER, A.J.
SOFTWARE - PRACTICE AND EXPERIENCE, VOL 12, ISSUE 7, PP. 623-625, 07/82

This paper briefly reviews the syntactic means which are present in some well-known programming languages for denoting the application of user-defined dyadic operators, and suggests an alternative syntax for operator applications. The languages which are discussed include Ada*, Algol 68, and BCPL. (*Ada is a trademark of the U.S. Department of Defense.)

INDEX TERMS

BCPL	ALGOL	LANGUAGE EVALUATION

DOCUMENT NUMBER: 3837 TYPE: JOURNAL ARTICLE

A ROBUST DISTRIBUTED SOLUTION TO THE DINING PHILOSOPHERS PROBLEM

CARGILL, T.A.
SOFTWARE - PRACTICE AND EXPERIENCE, VOL 12, ISSUE 10, PP. 965-969, 10/82

A distributed solution to Dijkstra's 'Dining Philosophers' problem is presented. A concrete implementation is presented in Ada*. Robustness properties are described. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SYNCHRONIZATION	DEADLOCKS	ROBUSTNESS
DISTRIBUTED PROCESSING		

SPONSORS: NATURAL SCIENCES & ENG RESEARCH COUNCIL OF CANADA

DOCUMENT NUMBER: 3841 TYPE: JOURNAL ARTICLE

AN EXPERIMENT WITH THE INTERCHANGEABILITY OF PROCESSES AND MONITORS

STROUSTRUP, BJARNE
SOFTWARE - PRACTICE AND EXPERIENCE, VOL 12, ISSUE 11, PP. 1011-25, 11/82

Two styles of operating system implementation based on the use of monitors and processes, respectively, are identified, and arguments for a basic equivalence of these systems despite large stylistic differences are presented. The 'Lauer-Needham Duality Hypothesis' states that the two styles are equivalent, both in terms of ease of programming and in efficiency of the resulting systems. A domain for which the first part of this claim holds is outlined, and data affirming the essential equivalence of performance within that domain are presented. Mesa and Ada* constructs are briefly mentioned that provide structures for processes and support a modular concept. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

MONITORS	SCHEDULING	PROCESS
MESA	MODULARITY	

DOCUMENT NUMBER: 3866 TYPE: JOURNAL ARTICLE

ABSTRACTION HIERARCHIES IN TOP-DOWN DESIGN

MACEWEN, GLENN H.; MARTIN, T. PATRICK
JOURNAL OF SYSTEMS AND SOFTWARE, VOL 2, ISSUE 3, PP. 213-224, 09/81

This article describes a program design discipline that has successfully produced well-modularized programs. The authors examine the basic approaches for data and procedural abstraction. The authors review top-down module construction capabilities, especially abstract type decomposition. Languages that support such capabilities are also examined, with specific emphasis placed on Euclid, Ada*, and Pascal. Finally, three large programs that have been designed and implemented using the design method are described. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

TOP DOWN DESIGN	EUCLID	MODULAR DECOMPOSITION
DATA STRUCTURES	STEPWISE REFINEMENT	PASCAL

SPONSORS: NATIONAL SCIENCES AND ENGINEERING RESEARCH COUNCIL

DOCUMENT NUMBER: 3882 DOCUMENT DATE: 02/83 TYPE: TECHNICAL REPORT

DRAFT - PQT/FQT TEST PLAN FOR THE ADA LANGUAGE SYSTEM

STAFF AUTHOR, SOFTECH,INC. TOTTEN POND RD,WALTHAM,MA 02154

This document is a test plan that defines testing of the Ada* Language System (ALS) through October 1983. The approach taken in performing the testing is identified. The test requirements and test procedure implementation are then described. The quality assurance and configuration management procedures are very briefly described. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS	QUALITY ASSURANCE	CONFIGURATION MANAGEMENT
TESTING	VERIFICATION	VALIDATION

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA

SPONSORS: U.S.ARMY,COMMUNICATIONS R & D COMND, FT.MONMOUTH, NJ

DOCUMENT NUMBER: 3887 TYPE: JOURNAL ARTICLE

SOFTWARE COMMUNICATION MECHANISMS: PROCEDURE CALLS VERSUS MESSAGES

STANKOVIC, JOHN A.
COMPUTER, VOL 15, ISSUE 4, PP. 19-25, 04/82

This article compares procedure calls to message communication. The term message is first defined and a brief description of the physical aspects of messages is presented to help clarify the distinction between the physical and logical message. Calls and messages are then compared, briefly mentioning examples in several languages. Other communication mechanisms, such as coroutines, PL/I tasks, and interrupts, are discussed. The author also briefly talks about the Ada* task facility and its associated ACCEPT, ENTRY, DELAY, and SELECT statements. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

COROUTINES	PL/I	PROCEDURES

DOCUMENT NUMBER: 3888 TYPE: JOURNAL ARTICLE

PROGRAMMING LANGUAGES

HUNT, JAMES W.
COMPUTER, VOL 15, ISSUE 4, PP. 70-88, 04/82

This article reviews the history of programming languages. The author begins with a discussion of the first programming languages ever developed. Then, FORTRAN and ALGOL are reviewed. Next, discussion centers on the specification and design of programming languages and describes several features of the YACC and Ada* programming languages. Different types of programming languages are discussed (i.e., data abstraction languages, concurrent programming languages, etc.) and certain features of each type of language are briefly examined. The appendix contains a listing of an Ada program. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

FORTRAN ALGOL LANGUAGE DESIGN
INTERPRETERS

DOCUMENT NUMBER: 3954 TYPE: JOURNAL ARTICLE

A GENERAL-PURPOSE ALGORITHM FOR ANALYZING CONCURRENT PROGRAMS

TAYLOR, RICHARD N.
COMMUNICATIONS OF THE ACM, VOL 26, ISSUE 5, PP. 362-376, 05/83

This article presents a static analysis algorithm that addresses the following problems: how processes are synchronized, what determines when programs are run in parallel, and how errors are detected in the synchronization structure. Though the research focuses on Ada*, the results can be applied to other concurrent programming languages such as CPS. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

CONCURRENT PROGRAMMING STATIC ANALYSIS SYNCHRONIZATION
SOFTWARE ENGINEERING TOOLS AND TECHNIQUES

SPONSORS: NATIONAL SCIENCE FOUNDATION;
U.S.ARMY RESEARCH OFFICE;
NATURAL SCIENCES & ENG RESEARCH COUNCIL OF CANADA

DOCUMENT NUMBER: 3964 TYPE: PAPER

AN INTRODUCTION TO ADA

SAIB, SABINA H.
ACM 81, PROCEEDINGS OF THE 1981 ANNUAL CONFERENCE, PP. 78-81, 11/11/81

This paper reviews the most important features of the programming language Ada*. The author defines ten of these features: (1) user defined data types, (2) clean control structures, (3) user defined machine features and input/output interfaces, (4) interprocess communication, (5) separate compilation, (6) type declarations with no implicit conversions, (7) parameters defined as input, output, or both, (8) exceptions and exception handlers, (9) generic procedures, and (10) packages. For each of these, examples of Ada codes are given. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

LANGUAGE STRUCTURE DATA TYPES CONTROL STRUCTURES
EXCEPTION HANDLING

AVAILABLE FROM: ACM ORDER DEPT.,P.O. BOX 64145,BALTIMORE,MD. 21264
ORDER NUMBER: 401810

DOCUMENT NUMBER: 3965 TYPE: PAPER

THE STRUCTURE OF "DATA STRUCTURES"

HANSEN, WILFRED J.
ACM 81, PROCEEDINGS OF THE 1981 ANNUAL CONFERENCE, PP. 89-95, 11/11/81

This paper examines how the curricula for a presentation on data structures should be organized. The author first defines data structures. A hierarchy of data structures is then presented. Suggested topics for possible omission from a data structures presentation are then discussed and reasons are given for the omissions. Among the omissions are topics such as formal specifications, programming language features (i.e., features of Ada*), "generic" data structures (examples of such features are given in Ada), and efficiency. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

DATA STRUCTURES HIERARCHIAL STRUCTURE CURRICULA

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ORDER NUMBER: 401810

DOCUMENT NUMBER: 3967 TYPE: PAPER

AN ADA COMPATIBLE SPECIFICATION LANGUAGE

BEALE, N.C.L.; PEYTON JONES, S.L.
ACM 81, PROCEEDINGS OF THE 1981 ANNUAL CONFERENCE, PP. 139-143, 11/11/81

This paper describes a notation for the formal specification of software packages. The main influences are the guarded commands of Dijkstra and the Algebraic Semantics of Guttag. However, a novel operator denoted by % is introduced, which allows algorithms to be abstracted in a specification, thereby creating a true specification language rather than another high order language. The notation, called ADL/1, is designed to be used in conjunction with Ada* and the work described is an extension of Ada's approach to some of the problems of programming in the large. The paper describes how to specify functions and program fragments. Then, the authors show how to specify packages and finally indicates how to specify tasks. The paper assumes a basic familiarity with Ada. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SPECIFICATIONS SPECIFICATION LANGUAGES

AVAILABLE FROM: ACM ORDER DEPT.,P.O. BOX 64145,BALTIMORE,MD. 21264
ORDER NUMBER: 401810

DOCUMENT NUMBER: 3971 TYPE: PAPER

PDL/ADA - A DESIGN LANGUAGE BASED ON ADA

SAMMET, JEAN E.; WAUGH, DOUGLAS W.; REITER, ROBERT W.
ACM 81, PROCEEDINGS OF THE 1981 ANNUAL CONFERENCE, PP. 217-229, 11/11/81

This paper discusses PDL/Ada* and design languages in general. First some general concepts of design languages are given. The development of PDL/Ada is then described, along with specific features of PDL/Ada. Finally, some problems encountered and techniques used in defining PDL/Ada are provided. An appendix shows two examples. The paper assumes that the reader has a basic familiarity with the Ada language, but detailed knowledge is not required. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

PROGRAM DESIGN LANGUAGE (PDL)
HIGHER-ORDER LANGUAGES
TARGET LANGUAGE

AVAILABLE FROM: ACM ORDER DEPT.,P.O. BOX 64145,BALTIMORE,MD. 21264
ORDER NUMBER: 401810

DOCUMENT NUMBER: 3983 DOCUMENT DATE: 04/81 TYPE: TECHNICAL REPORT

A COMPARISON OF PROGRAMMING LANGUAGES: ADA, PRAXIS, PASCAL, C

EVANS, ARTHUR JR.

This report introduces Praxis and compares this language to Ada*, Pascal, and C. First, each language is described. Then, the four languages are compared with respect to the way each treats certain specific language features. The topics discussed include data types, placement of data in the computer's memory, expressions and side effects, statements and structured programming, program structure, parallel processing and input/output. Next, meta-linguistic issues are discussed. The author investigates language size and related issues of documentation and standardization. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

PASCAL
DATA TYPES
STRUCTURED PROGRAMMING LANGUAGE
STANDARDIZATION
C LANGUAGE
MEMORY MANAGEMENT
LANGUAGE EVALUATION
EXCEPTION HANDLING
DOCUMENTATION

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
REPORT NUMBER: 4634

SPONSORS: LAWRENCE LIVERMORE LABORATORY,LIVERMORE, CA

DOCUMENT NUMBER: 3984 TYPE: JOURNAL ARTICLE

RECOLLECTIONS ON HISTORY OF ADA ENVIRONMENTS

BUXTON, JOHN N.; DRUFFEL, LARRY E.; STANDISH, THOMAS A.
ACM ADA LETTERS, VOL 1, ISSUE 1, PP. 16-21, 08/81

This article summarizes the historical events leading to the development of Ada* Programming Support Environments. The aim of this article is to describe the context in which the support systems for Ada were defined and to acknowledge the contributions of the many participants. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS

DOCUMENT NUMBER: 3985 TYPE: JOURNAL ARTICLE

FROM HOLWG TO AJPO · ADA IN TRANSITION

COHEN, PAUL M.
ACM ADA LETTERS, VOL 1, ISSUE 1, PP. 22-25, 08/81

This article reviews the development of the Ada* programming language from its initial development by the Department of Defense (DOD) High Order Language Working Group (HOLWG) to the establishment of the Ada Joint Program Office (AJPO). The author also reviews the steps taken to establish MIL-STD-1815 as the standard for the Ada language. (*Ada is a trademark of the U.S. Departme of Defense).

INDEX TERMS

STANDARDIZATION

DOCUMENT NUMBER: 3986 TYPE: JOURNAL ARTICLE

FORTRAN-LIKE FORMATTED OUTPUT WITH ADA

WHITAKER, LT. COL. W.A.
ACM ADA LETTERS, VOL 1, ISSUE 1, PP. 26-28, 08/81

This article describes a method for making the transition to Ada* comfortable for those who have been using FORTRAN. The method uses Ada constructs in a FORTRAN-like formatted input-output. Examples of the Ada programs that produce the FORTRAN-like outputs are provided. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

FORTRAN

DOCUMENT NUMBER: 3987 TYPE: JOURNAL ARTICLE

TASK STATE TRANSITIONS IN ADA

HARTIG, HERMANN; PFITZMANN, ANDREAS; TREFF, LEO
ACM ADA LETTERS, VOL 1, ISSUE 1, PP. 31-12, 08/81

By stepwise refinement, a state transition diagram for Ada* tasks is derived. Four steps of refinements are explained and then a complete list of state transitions is given containing references and short explanations. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

STEPWISE REFINEMENT STATE DIAGRAMS

DOCUMENT NUMBER: 3988 DOCUMENT DATE: 03/15/81 TYPE: SPECIFICATION

ADA INTEGRATED ENVIRONMENT III COMPUTER PROGRAM DEVELOPMENT SPECIFICATION · VOLUME I

STAFF AUTHOR, TEXAS INSTRUMENTS, INC., LEWISVILLE, TX

This specification establishes the requirements for performance, design, test, and qualification of a computer program identified as the Ada Software Environment (ASE). The document identifies the functions and the software tools involved. The ASE provides a machine-independent interface between any Ada program (including tools within the Ada Integrated Environment) and the computer system on which it executes. One section also reviews the quality assurance provisions of the ASE. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS QUALITY ASSURANCE KERNEL

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: AD A109 976
REPORT NUMBER: 81-360

SPONSORS: ROME AIR DEVELOPMENT CENTER, GAFB, ROME, NY 13441

DOCUMENT NUMBER: 3990 DOCUMENT DATE: 03/15/81 TYPE: SPECIFICATION

ADA INTEGRATED ENVIRONMENT III COMPUTER PROGRAM DEVELOPMENT SPECIFICATION - VOLUME III

STAFF AUTHOR, TEXAS INSTRUMENTS, INC., LEWISVILLE, TX

This specification establishes the requirements for the performance, design, test, and acceptance of a computer program identified as the Ada* optimizing compiler for the Ada Integrated Environment (AIE). The document identifies the functional capabilities of the Ada optimizing compiler and describes the interface between the compiler and the AIE, the command language, the library file, and the program binder. One section also provides the quality assurance provisions of the compiler. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS QUALITY ASSURANCE
DEVELOPMENT SUPPORT LIBRARIAN COMPILERS
COMMAND LANGUAGES

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: AD A109 978
REPORT NUMBER: 81-360

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DOCUMENT NUMBER: 3991 DOCUMENT DATE: 03/15/81 TYPE: SPECIFICATION

ADA INTEGRATED EVNIRONMENT III COMPUTER PROGRAM DEVELOPMENT SPECIFICATION - VOLUME IV

STAFF AUTHOR, TEXAS INSTRUMENTS, INC., LEWISVILLE, TX

This specification establishes the requirements for the performance, design, test, and acceptance of a computer program configuration item identified as the Ada* Programming Toolset for the Ada Integrated Environment (AIE). The document identifies the functional capability of each software tool and describes the interfaces between each too and the Ada Software Environment, other Ada programs, the database, and users. One section also examines the quality assurance provisions of the toolset. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

QUALITY ASSURANCE SOFTWARE TOOL SYSTEMS EDITORS

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: AD A109 979
REPORT NUMBER: 81-360

SPONSORS: ROME AIR DEVELOPMENT CENTER, GAFB, ROME, NY 13441

DOCUMENT NUMBER: 3992 TYPE: TECHNICAL REPORT

ADAPLEX: RATIONALE AND REFERENCE MANUAL

STAFF AUTHOR, COMPUTER CORP OF AMER.,TECHNOLOGY SQ,CAMBRIDGE,MA

This report describes ADAPLEX, a language for developing Ada* database application programs. ADAPLEX is an extension of Ada containing additional constructs derived from a pre-existing database sublanguage called DAPLEX. The report consists of two parts. The first part presents the rationale for the design of ADAPLEX. It explains why Ada was extended to ADAPLEX and justifies the choice of the additional constructs. The second part has the form of a reference manual for ADAPLEX. It describes the syntax and semantics of the new constructs and shows how they are embedded into Ada. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

LANGUAGE DESIGN DATABASE MANAGEMENT SYSTEMS
LANGUAGE STRUCTURE EMBEDDED LANGUAGES

AVAILABLE FROM: THE AUTHOR

SPONSORS: DEFENSE ADVANCED RESEARCH PROJECTS AGENCY,ARLINGTON,VA

DOCUMENT NUMBER: 3993 DOCUMENT DATE: 11/80 TYPE: TECHNICAL REPORT

FORMAL DEFINITION OF THE ADA PROGRAMMING LANGUAGE

HUERAS, JON F.

This report describes the programming language Ada*, designed in accordance with the Steelman requirements of the United States Department of Defense (DOD). After a brief review of the design goals of the language, the document presents numerous sections that define the constructs of Ada. The document is divided into sections about the lexical elements, declarations and types, names and expressions, statements, subprograms, packages, visibility rules, tasks, program structure, exceptions, generic program units, and representation specification and implementation dependent features. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

LANGUAGE DESIGN LANGUAGE STRUCTURE DATA TYPES
EXCEPTION HANDLING

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA

DOCUMENT NUMBER: 3994 TYPE: JOURNAL ARTICLE

PROGRAM OVERVIEW

FONASH, PETER
SIGNAL - JOURNAL OF AFCEA, VOL 37, ISSUE 10, PP. 27-31, 07/83

This article provides an overview of the Department of Defense (DOD) effort to implement, introduce, and provide life cycle support for the Ada* programming language. A brief history of the Ada effort is provided and standardization efforts are reviewed. Next, the author examines the concept of an Ada Programming Support Environment (APSE) and briefly describes the development efforts of the Ada Language System (ALS) and the Ada Integrated Environment (AIE). Efforts of the Kernel APSE (KAPSE) Interface Team (KIT) are then discussed. Finally, the capabilities for compiler validation are discussed and plans being made for formally introducing Ada are given. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

STANDARDIZATION SOFTWARE TOOL SYSTEMS

DOCUMENT NUMBER: 3995 DOCUMENT DATE: 03/15/81 TYPE: SPECIFICATION

ADA INTEGRATED ENVIRONMENT II COMPUTER PROGRAM DEVELOPMENT SPECIFICATION - VOLUME I

STAFF AUTHOR, COMPUTER SCIENCES CORP.;
STAFF AUTHOR, SOFTWARE ENGINEERING ASSOCIATES

This document presents the Computer Program Development Specification for the Computer Program Configuration Item (CPCI) called the Kernel Ada* Programming Support Environment (KAPSE) framework (KFW). The specification provides the performance, design, and testing requirements for the KFW. The authors then present the performance and design requirements. Next, the authors present the testing and quality assurance requirements. Quality assurance provisions and documentation are also reviewed. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS QUALITY ASSURANCE DOCUMENTATION
KERNEL REQUIREMENTS

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: AD A109 980

SPONSORS: ROME AIR DEVELOPMENT CENTER, GAFB, ROME, NY 13441

DOCUMENT NUMBER: 3996 DOCUMENT DATE: 03/08/81 TYPE: TECHNICAL REPORT

TECHNICAL REPORT - DESIGN OF THE ADA INTEGRATED ENVIRONMENT

STAFF AUTHOR, TEXAS INSTRUMENTS, INC., LEWISVILLE, TX

This report supplements the Ada* Integrated Environment (AIE) System Specification and Computer Program Development Specifications. It provides some general design philosophies and criteria, discusses key design issues, and highlights the design decisions made for various components of the AIE. An overview of the Ada software environment is given and the command language is reviewed. The Ada database subsystem is then discussed and the compiler and text editor is described. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS COMMAND LANGUAGES
DATABASE MANAGEMENT SYSTEMS EDITORS
COMPILERS KERNEL VIRTUAL MACHINES
DESIGN

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: AD A109 748
REPORT NUMBER: 81-361

SPONSORS: ROME AIR DEVELOPMENT CENTER, GAFB, ROME, NY 13441

DOCUMENT NUMBER: 3998 DOCUMENT DATE: 09/82 TYPE: TECHNICAL REPORT

AN EVALUATION OF THE NEEDS AND REQUIREMENTS FOR THE ESTABLISHMENT OF AN ADA LIAISON ORGANIZATION

JORSTAD, NORMAN D.; LEE, JOHN A.N.; LOMONACO, SAMUEL J. JR.

The first section of this report examines the development and controls needed to establish a new programming language. The aspects of these problems that affect the Ada* Joint Program Office (AJPO) are also discussed in this section. The following section of this report rationalizes the steps the Ada* Liaison Organization (ALO) must undertake to satisfy the needs of both the AJPO as well as those external organizations with whom AJPO has made agreements in order to standardize the Ada language. The next section contains a listing of the membership and tasks to be undertaken by the subcommittes of ALO. The proposed charter of the ALO is presented in the Appendix. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

STANDARDIZATION

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: AD A122286

SPONSORS: DEFENSE ADVANCED RESEARCH PROJECTS AGENCY,ARLINGTON,VA

DOCUMENT NUMBER: 3999 DOCUMENT DATE: 07/82 TYPE: TECHNICAL REPORT

ADA IN CONTROL APPLICATIONS: A CASE STUDY

MATTSSON, S.E.

This report considers the Ada* programming language in a control system application. A wind turbine system has been selected as an example. The main part of this study is devoted to ascertaining how the design and system structuring are influenced and supported by Ada. Program structure is discussed in regards to interaction with external events and demands on response times. The two kinds of buffers discussed in this report are buffers for local use inside tasks and use between tasks. I/O handlers are examined as they pertain to the reception and sending of messages. (*Ada is a trademark of the U. S. Department of Defense).

INDEX TERMS

COMMAND, CONTROL, &COMMUNICATION APPLICATION LANGUAGE STRUCTURE
LANGUAGE DESIGN INTERFACE CONTROL STRUCTURED PROGRAMMING
STRUCTURED DESIGN SYSTEM DESIGN SYSTEM STRUCTURING
REAL-TIME SYSTEMS

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: N83 13848

DOCUMENT NUMBER: 4045 TYPE: JOURNAL ARTICLE

PREDICTING COST-OF-CHANGE FROM DESIGN STRUCTURE METRICS

GEORGE, DENNIS; GUSTAFSON, DAVID A.; HENRY, SALLIE; HUTCHENS, DAVID; KAFURA, DENNIS; SAYLER, JOHN
SOFTWARE ENGINEERING NOTES (ACM SIGSOFT), VOL 7, ISSUE 1, PP. 30-35, 01/82

This article is a proposal for an experiment to relate software metrics to software project observables, in particular to the cost associated with changing a software system. The experimental framework will be the design, implementation, and testing of three similar real world projects using the Ada* programming language. The plan for the experiment is described and possible benefits are given. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

MODIFICATION MAINTENANCE COSTS CONFIGURATION MANAGEMENT

DOCUMENT NUMBER: 4054 TYPE: JOURNAL ARTICLE

SAFETY AND POWER

MACRAKIS, STAVROS M.
SOFTWARE ENGINEERING NOTES (ACM SIGSOFT), VOL 7, ISSUE 2, PP. 25-26, 04/82

This article discusses the question of safety and power in programming languages. The concept of safety is defined as used in the context of the article. The safety concept is then examined as applied to the Ada* programming language. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

LANGUAGE STRUCTURE EFFICIENCY

DOCUMENT NUMBER. 4056 DOCUMENT DATE: 05/82 TYPE: TECHNICAL REPORT

SUMMARY OF RESPONSES TO THE SOFTWARE TECHNOLOGY INITIATIVE QUESTIONNAIRE

SIEGEL, ERIC D.

This document summarizes responses to the Software Technology Initiative (STI) questionnaire. Among the topics being covered by the STI questionnaire are software support environments, the Ada* programming language, rapid prototyping, acquisition management, fault detection and error handling, and programmer training. The questionnaire response summaries are presented and a summary of the part of the questionnaire dealing with software problem areas is provided. The proposed thrusts are then described. The questionnaire, additional problem areas suggested by respondents, and other summaries are included in the appendices. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

PROJECT MANAGEMENT SURVEYS SOFTWARE TOOL SYSTEMS
PROTOTYPES PROGRAMMER TRAINING ACQUISITION MANAGEMENT
EXCEPTION HANDLING FAULT DETECTION

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: PB83-109660
REPORT NUMBER: MTR-82W00085

SPONSORS: OUSD (R&E) SS PENTAGON

DOCUMENT NUMBER: 4059 TYPE: JOURNAL ARTICLE

REFLECTIONS ON CAPITAL-INTENSIVE SOFTWARE TECHNOLOGY

WEGNER, PETER
SOFTWARE ENGINEERING NOTES (ACM SIGSOFT), VOL 7, ISSUE 4, PP. 24-33, 10/82

This article discusses capital intensive software technology and the concept of reusability. The author establishes a relationship between capital and reusability because he defines capital as a reusable resource. Evolutionary systems are reviewed as examples of capital-intensive software technology. Other examples of capital-intensive software technologies reviewed by the author include the following: (1) the Ada* programming language, (2) object-oriented programming, (3) software concepts, (4) application generators such as office automation, and (5) fourth and fifth generation computer systems. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

EVOLUTIONARY SYSTEMS REUSABILITY SMALL TALK
SIMULA

DOCUMENT NUMBER: 4076 TYPE: PAPER

EXAMPLE OF CAMAC PROGRAMMING IN ADA

ZALEWSKI, JANUSZ
SOCOCO'82,3RD IFAC/IFIP ON SOFTWARE COMPUTER CONTROL, 3 P., 10/08/82

A short Ada* program for the single-crate CAMAC system controlling the neutron spectrometer is presented. The CAMAC programming is based on the IEEE-758/IEC-713 standard incorporated into Ada language needs in programming standard interface systems and what the user gains when combining best Ada and CAMAC features. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

NUCLEAR REACTOR APPLICATIONS REAL-TIME SYSTEMS

AVAILABLE FROM: IFIPS SECRETARIAT

DOCUMENT NUMBER: 4077 DOCUMENT DATE: 1982 TYPE: TECHNICAL REPORT

DESCRIPTORS FOR DAS

VAN KATWIJK, J.; VAN SOMEREN, J.

This report describes a set of data descriptors used in the runtime data representation of a subset of Ada* called the Delft Ada Subset (DAS). A cheap and reasonably efficient model for dealing with the run-time representation of data of DAS programs is defined. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

DATA TYPES

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: PB82-262072
REPORT NUMBER: REPORT 82-20

DOCUMENT NUMBER: 4091 TYPE: PAPER

SOFTWARE DEVELOPMENT COSTING · THE IMPACT OF LANGUAGE STANDARDIZATION

PHOHA, SHASHI
16TH ANNUAL DOD COST ANALYSIS SYMPOSIUM, 48 P., 10/08/81

This paper estimates the additional costs which may be incurred by an individual software development project which is required to use a newly developed standardized programming language. The estimated impact of using JOVIAL J73 for the Base Installation Security System/Entry Control System is outlined in the areas of cost, schedule, and technical risk. In view of Ada's* adoption as a DoD standard, it is recommended that an optimal strategy be developed for phasing in the newly developed standardized language which would minimize the impact on software development programs. (*Ada is a trademark of the U.S. Department of Defense.)

INDEX TERMS

JOVIAL
COMPILERS
COST ESTIMATION
STANDARDIZATION

AVAILABLE FROM: THE AUTHOR

DOCUMENT NUMBER: 4097 TYPE: JOURNAL ARTICLE

DEVELOPING AN ADA PROGRAMMING SUPPORT ENVIRONMENT

RYER, MICHAEL
MINI-MICRO SYSTEMS, VOL 15, ISSUE 9, PP. 223-226, 09/82

This article compares the Ada* Integrated Environment (AIE) to the UNIX** operating System. The file structures and access-control mechanisms of both AIE and UNIX are examined. The author points out what the similarities are and feels that the differences are found in the two source languages (Ada and the C language). The author says that Ada is strongly typed and C is not. (*Ada is a trademark of the U.S. Department of Defense.) (**UNIX is a trademark of Bell Laboratories).

INDEX TERMS

SOFTWARE TOOL SYSTEMS
UNIX
ACCESS-CONTROL MECHANISMS
FILE MANAGEMENT SYSTEMS
C LANGUAGE

DOCUMENT NUMBER: 4112 TYPE: PAPER

FEASIBILITY ASSESSMENT OF JOVIAL TO ADA TRANSLATION

EHRENFRIED, DANIEL H.
PROCEED., STANDARDS OF THE AVIONICS STANDARD. CONF., VOL 1, PP. 65-84, 12/82;
JOVIAL LANGUAGE CONTROL FACILITY NEWSLETTER, VOL 6, ISSUE 1, 01/83

This paper examines the feasibility and cost effectiveness of developing a JOVIAL/J73 to Ada* translation system. A set of general requirements for performing source-to-source translation at the high order language (HOL) level is defined. These requirements are then refined to reflect the specific characteristics of J73,Ada, the embedded applications environment, and the state-of-the-art in translation technology. Next, the paper considers translation system requirements when the source HOL is JOVIAL/J73, Ada is the target HOL, and the type of software to be translated is real-time embedded software. Finally, JOVIAL/J73 and Ada are compared as to language structures. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

JOVIAL	CONVERSION AIDS	EFFICIENCY
ROBUSTNESS	MAINTAINABILITY	RELIABILITY
LANGUAGE EVALUATION	COST EFFECTIVENESS	
EMBEDDED COMPUTER SYSTEMS		LANGUAGE STRUCTURE

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
REPORT NUMBER: ASD(ENA)-TR-82-5031

DOCUMENT NUMBER: 4153 TYPE: TECHNICAL REPORT

TRANSLATION OF CMS-2 PROGRAMS TO ADA

GILLMAN, RICHARD; CROCKER, STEPHEN D.; TAYLOR, CRAIG

This report describes a study from the Automatic Translation of Old Programs and Systems (AUTOPSY) project. The attention is focused on translation of CMS-2M programs into Ada*. The translation system design is reviewed. Then, a Pattern-directed Production System for S-expressions (APPSS) is described and the steps for language translation are examined. An example is then given and problems and improvements are discussed. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

CMS-2	CONVERSION AIDS	TRANSLATORS

AVAILABLE FROM: THE AUTHOR
REPORT NUMBER: ISI/WP-19

SPONSORS: DEFENSE ADVANCED RESEARCH PROJECTS AGENCY,ARLINGTON,VA

DOCUMENT NUMBER: 4163 TYPE: JOURNAL ARTICLE

RECOMMENDED: A MINIMUM STANDARD SOFTWARE TOOLSET

GLASS, ROBERT L.
SOFTWARE ENGINEERING NOTES (ACM SIGSOFT), VOL 7, ISSUE 4, PP. 3-13, 10/82

This article briefly mentions research in the area of tools and toolsets and asserts that what is needed is a Minimum Standard Software Toolset (MST) which is available to all professional programmers in all workplaces. The fundamental content of such a toolset is proposed, based heavily on the work of the U.S. Department of Defense in its Ada* Programming Support Environment (APSE). The author provides a description of the necessary tools for each phase of the software life cycle. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS PROGRAM DESIGN LANGUAGE (PDL)
MAINTENANCE TOOLS AND TECHNIQUES CONFIGURATION MANAGEMENT

DOCUMENT NUMBER: 4199 TYPE: JOURNAL ARTICLE

A SYMBOL TABLE ABSTRACTION TO IMPLEMENT LANGUAGES WITH EXPLICIT SCOPE CONTROL

COOK, ROBERT P.; LEBLANC, THOMAS J.
IEEE TRANSACTIONS ON SOFTWARE ENGINEERING, VOL SE9, ISSUE 1, PP. 8-12, 01/83

The authors of this article are concerned with languages in which the programmer has explicit control over the referencing environment of a name. Several modern programming languages, including Ada*, Euclid, Mesa, and Modula, implement these control capabilities. This paper describes a simple technique which uses the traditional concepts of a hashed symbol table and lexical level to solve many of the symbol table implementation problems associated with explicit scope control. The authors claim that the primary advantage of this technique is that a single symbol table abstraction can be used to simply and efficiently solve most problems in scope control. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

EUCLID MESA MODULA
LANGUAGE EVALUATION

SPONSORS: NATIONAL SCIENCE FOUNDATION

DOCUMENT NUMBER: 4200 TYPE: JOURNAL ARTICLE

SIMULATION OF PROCEDURE VARIABLES USING ADA TASKS

LAMB, DAVID A.; HILFINGER, PAUL N.
IEEE TRANSACTIONS ON SOFTWARE ENGINEERING, VOL SE9, ISSUE 1, PP. 13-15, 01/83

This article briefly gives a technique for partially simulating procedure variables using Ada* tasks. The simulation involves using interface tools, a technique which may be useful for other problems. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

PROGRAMMING TECHNIQUES/METHODOLOGIES PROGRAMMING LANGUAGE

SPONSORS: DEFENSE ADVANCED RESEARCH PROJECTS AGENCY,ARLINGTON,VA

DOCUMENT NUMBER: 4249 TYPE: JOURNAL ARTICLE

A ONE-PASS ALGORITHM FOR OVERLOAD RESOLUTION IN ADA

BAKER, T. P.
ACM TRANS. ON PROGRAMMING LANGUAGES & SYSTEMS, VOL 4, ISSUE 4, PP. 601-614, 10/82

A simple method is presented for detecting ambiguities and finding the correct interpretations of expressions in the programming language Ada*. Unlike previously reported solutions to this problem, which require multiple passes over a tree structure, the method described in this article operates in one bottom-up pass, during which a directed acyclic graph is produced. The correctness of this approach is demonstrated by a brief formal argument. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

PROGRAMMING TECHNIQUES/METHODOLOGIES ALGORITHM ANALYSIS

SPONSORS: NATIONAL SCIENCE FOUNDATION;
U.S.AIR FORCE

DOCUMENT NUMBER: 4250 TYPE: JOURNAL ARTICLE

EFFICIENT COMPUTATION OF LALR(1) LOOK-AHEAD SETS

DEREMER, FRANK; PENNELLO, THOMAS
ACM TRANS. ON PROGRAMMING LANGUAGES & SYSTEMS, VOL 4, ISSUE 4, PP.615-649, 10/82

In this article, two relations that capture the essential structure of the problem of computing LALR(1) look-ahead sets are defined, and an efficient algorithm is presented to compute the sets in time linear in the size of the relations. Statistics are given for several languages (including Pascal and Ada*) as to the relation sizes, sets required, timing statistics, and comparisons with the compiler-compiler called YACC. The authors then show how to generate debugging diagnostics for grammars that are not LALR(1). Trace algorithms are discussed, including traces produced by the MetaWare** translator system for an Ada grammar that was not LALR(1). (*Ada is a trademark of the U. S. Department of Defense);(**MetaWare is a trademark of MetaWare of Santa Cruz, Ca.).

INDEX TERMS

COMPILER-COMPILERS TRANSLATORS ALGORITHM ANALYSIS
PASCAL

SPONSORS: HEWLETT-PACKARD CO.

DOCUMENT NUMBER: 4251 TYPE: JOURNAL ARTICLE

DOD POLICY FOR ACQUISITION OF EMBEDDED COMPUTER RESOURCES

GROVE, MARK H.
CONCEPTS: THE JRNL OF DEF. SYST. ACQ. MANAGEMENT, VOL 5, ISSUE 4, PP. 9-36, 09/82

This article defines embedded computer resources (ECR) and deals with some of the problems associated with it, especially in terms of Department of Defense (DOD) standardization policy. Several initiatives for standardizing software management practices, languages, and architectures upon which the software must function are discussed. The development of the Ada* programming language is reviewed and various military standards and a guidebook are examined. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

ACQUISITION MANAGEMENT STANDARDIZATION
EMBEDDED COMPUTER SYSTEMS COST

DOCUMENT NUMBER: 4252 TYPE: JOURNAL ARTICLE

MILITARY COMPUTERS IN TRANSITION: STANDARDS AND STRATEGY

BECKER, LOUISE GIOVANE

CONCEPTS: THE JRNL OF DEF. SYST. ACQ. MANAGEMENT, VOL 5, ISSUE 4, PP. 37-47, 09/82

This article briefly examines some of the Department of Defense (DOD) efforts and related armed services activities in determining a computer technology and standards strategy. The article describes such issues and efforts as the Military Computer Family (MCF), the Nebula instruction set architecture, and the Ada* programming language. Other DoD standards and directives, such as MIL-STD-1750 and DoD Directive 5000.29, are reviewed. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

MILITARY COMPUTER FAMILY NEBULA STANDARDIZATION

DOCUMENT NUMBER: 4270 DOCUMENT DATE: 08/82 TYPE: TECHNICAL REPORT

ADA SOFTWARE DESIGN METHODS FORMULATION CASE STUDIES REPORT

STAFF AUTHOR, SOFTECH,INC. TOTTEN POND RD,WALTHAM,MA 02154

This report presents a collection of case studies which illustrate, in detail the effective use of Ada* to solve the kinds of design problems that arise in developing embedded software systems. The case studies are of two kinds: pedagogical and observational. The pedagogical case studies present examples that can be incorporated in training material, while the observational case studies record findings that contribute to a better understanding of Ada usage issues. The case studies illustrate the following: (1) conceptual difficulties faced by novice Ada users, (2) Ada solutions to design problems, (3) elegant uses of Ada, and (4) Ada coding paradigms. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

EMBEDDED COMPUTER SYSTEMS
DESIGN ANALYSIS REQUIREMENTS ANALYSIS
PROGRAM DESIGN LANGUAGE (PDL)
CLARITY
SOFTWARE LIFE CYCLE
RADAR APPLICATIONS
LEGIBILITY

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: AD A124 996
REPORT NUMBER: 1094-1.1

SPONSORS: U.S.ARMY COMM-ELECTRONICS CMD(CECOM), FT. MONMOUTH, NJ

DOCUMENT NUMBER: 4271 DOCUMENT DATE: 10/82 TYPE: TECHNICAL REPORT

ADA SOFTWARE DESIGN METHODS FORMULATION FINAL REPORT

STAFF AUTHOR, SOFTECH,INC. TOTTEN POND RD,WALTHAM,MA 02154

This report addresses the results of an effort completed for the Ada* Software Design Methods Formulation contract. The report contains a generic job classification schema for the embedded systems community and identifies Ada knowledge requirements for each job category. It also recommends an Ada training curriculum based on the requirements identified and determines appropriate training methods for embedded systems programmers. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

CURRICULA	PROJECT MANAGEMENT SURVEYS	
SOFTWARE TOOL SYSTEMS	EMBEDDED COMPUTER SYSTEMS	
PROGRAMMER TRAINING	DATA COLLECTION	PROGRAMMING LANGUAGE
DESIGN METHODOLOGIES		

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: AD A124 998
REPORT NUMBER: 1094-2.1

SPONSORS: U.S.ARMY COMM-ELECTRONICS CMD(CECOM), FT. MONMOUTH, NJ

DOCUMENT NUMBER: 4272 DOCUMENT DATE: 10/82 TYPE: TECHNICAL REPORT

ADA SOFTWARE DESIGN METHODS FORMULATION APPENDICES TO FINAL REPORT

STAFF AUTHOR, SOFTECH,INC. TOTTEN POND RD,WALTHAM,MA 02154

This document contains the appendices to the final report on Ada* Software Design Methods Formulation. The first appendix is a listing of participating companies and government facilities for the Industry/Government Work Force Survey. The second appendix is a copy of the actual survey used to collect data from personnel involved with embedded computer system software. The final appendix is a report that serves as a descriptive analysis of the results of the survey. The report is written by Robert J. Muller of M.I.T. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

PROJECT MANAGEMENT SURVEYS		DATA COLLECTION
PROGRAMMER TRAINING	DESIGN METHODOLOGIES	PROGRAMMING LANGUAGE
DATA ANALYSIS		

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: AD A124 997
REPORT NUMBER: 1094-2

SPONSORS: U.S.ARMY COMM-ELECTRONICS CMD(CECOM), FT. MONMOUTH, NJ

DOCUMENT NUMBER: 4319 TYPE: TECHNICAL REPORT

DESIGN OF AN INTELLIGENT PROGRAM EDITOR

SHAPIRO, DANIEL G.; MCCUNE, BRIAN P.; WILSON, GERALD A.

This report discusses results of a project to develop a functional design for and assess the feasibility of an intelligent program editor for Ada* and other programming languages. The editor will support program development and maintenance activities by providing advanced techniques for searching through programs, manipulating programs, analyzing programs for potential errors and good style, and maintaining structured documentation. These techniques are base on knowledge-based systems technology from the field of artifical intelligence. Feasibility of the program editor is demonstrated by a functional design and an initial implementation of the multiple knowledge bases representing a small program and a search (query) mechanism that uses them. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

EDITORS	SOFTWARE TOOL SYSTEMS	ARTIFICIAL INTELLIGENCE
KNOWLEDGE BASED SYSTEMS	PROGRAM ANALYSIS	DOCUMENTATION

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD.SPRINGFIELD,VA
ORDER NUMBER: AD A120319
REPORT NUMBER: TR 3023-1

SPONSORS: OFFICE OF NAVAL RESEARCH,QUINCY ST.,ARLINGTON,VA 22217

DOCUMENT NUMBER: 4326 DOCUMENT DATE: 11/12/82 TYPE: SPECIFICATION

SYSTEM SPECIFICATION FOR ADA INTEGRATED ENVIRONMENT TYPE A AIE(1)

STAFF AUTHOR, INTERMETRICS,INC.,CAMBRIDGE,MA 02138

This specification esablishes the performance, design, development and test requirements for the Ada* Integrated Environment (AIE) an integrated set of software tools designed to support the development and maintenance of software written in the Ada programming language. The requirements of the AIE are given and quality assurance provisions are reviewed. The components of the system are defined and the appendix provides a configuration components chart. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS	KERNEL	QUALITY ASSURANCE
REQUIREMENTS	SPECIFICATIONS	

AVAILABLE FROM: INTERMETRICS, INC. 733 CONCORD AV CAMBRIDGE, MA 02138
REPORT NUMBER: IR-676-2

SPONSORS: ROME AIR DEVELOPMENT CENTER, GAFB, ROME, NY 13441

DOCUMENT NUMBER: 4360 DOCUMENT DATE: 03/02/81 TYPE: TECHNICAL REPORT

SYNTAX ERROR HANDLING IN COMPILERS

SIPPU, SEPPO

Syntax errors and their handling in compilers are studied. An error handling technique applicable to LR(1) parsing is presented and analyzed. The technique is completely automatic and is based solely on the context-free grammar of the language. Special attention is paid to diagnostic aspects such as the generatio of descriptive recovery-independent error messages. The technique has been implemented in the compiler writing system HLP (Helsinki Language Processor), and the author presents experimental results that have been obtained by testing the technique with erroneous student-written ALGOL programs. The author also provides a comparison of error handling techniques in five languages: ALGOL W subset, Pascal, Euclid, Ada*, and an extended ALGOL subset. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

COMPILERS	RECOVERY	ERRORS
PASCAL	ALGOL	EUCLID

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: PB83-107623
REPORT NUMBER: A-1981-1

DOCUMENT NUMBER: 4365 TYPE: JOURNAL ARTICLE

POINTERS TO LOCAL VARIABLES

SMART, ROBERT
ACM SIGPLAN NOTICES, VOL 15, ISSUE 8, PP. 88-89, 08/80

This article examines the list processing capabilities of the Ada* programming language. The author points out that Ada is designed to prevent multiple levels of pointers (access types) and also pointers to local variables. The author feels this is a restriction on pointers and states that the first element of a list often has to be treated as a special case even though it is intuitively not. To illustrate this, the author considers the problem of maintaining a linked list of integers in order. Examples of code are given for Ada, Algol 68, and assembly language. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

ALGOL	ASSEMBLY LANGUAGE	PROCEDURES
LIST PROCESSING		

DOCUMENT NUMBER: 4366 TYPE: JOURNAL ARTICLE

SOFTWARE UPDATE AIDS DEFENSE PROGRAM

ELSON, BENJAMIN M.
AVIATION WEEK & SPACE TECHNOLOGY, PP. 209-221, 03/14/83

This article describes the Ada* language effort. The trends in software costs are briefly reviewed. The development efforts for Ada are then examined and the Ada Programming Support Environment (APSE) efforts are described. Next, areas where Ada may be applied are examined and several of the Ada language structures (i.e., typing facilities, generic program units, etc.) are described. Finally, industry and Department of Defense uses of Ada are discussed. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS	LANGUAGE STRUCTURE

DOCUMENT NUMBER: 4367 TYPE: JOURNAL ARTICLE

NEW DIRECTIONS IN EMBEDDED COMPUTER SYSTEMS

FONASH, PETER; GAMINO, ROBERT
ARMY RESEARCH, DEVELOPMENT & ACQUISITION MAGAZINE, PP. 10-11, 09/82

This article reports the status of planned efforts to overcome the cost and functional problems of embedded computer systems. The article focuses on the development of the Ada* language and efforts to coordinate the introduction and adoption of Ada and its related facilities. Regulations and standards related to Ada are also reviewed. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

EMBEDDED COMPUTER SYSTEMS
STANDARDIZATION
COST

DOCUMENT NUMBER: 4368 TYPE: TEXT

A COMPLETE INTRODUCTION TO ADA

YOUNG, S.J.

This book introduces the Ada* programming language. All Ada language features are explained and wherever possible illustrated by examples. An extended example is included at the end of each chapter. Strong emphasis is placed on the use of the package in supporting data abstraction. Exercises are provided with each chapter and solutions to a selection of these are given at the end of the book. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

LANGUAGE STRUCTURE
DATA TYPES
EXCEPTION HANDLING

AVAILABLE FROM: THE AUTHOR

DOCUMENT NUMBER: 4369 DOCUMENT DATE: 10/80 TYPE: TECHNICAL REPORT

THE CHARRETTE ADA COMPILER

LAMB, DAVID A.; HISGEN, ANDY; ROSENBERG, JONATHAN; SHERMAN, MARK; BORKAN, MARTHA

This report describes the implementation of a compiler for preliminary Ada*. Two separate but related efforts are described in the report. The Front End of the compiler, developed at Intermetrics, is one of the two efforts, and the Back End of the compiler, developed at Carnegie Mellon University is the second effort described in the report. The goals of the two projects are introduced, the structure of the compiler is examined, and the intermediate languages used in the compiler are reviewed. The run-time representation of types and variables is described. Then, the Front End is described. Next, the phases of the compiler that transform the output of the Front End (TCOL-Ada) into a lower-level intermediate language (MIL) are described. The translation of MIL into assembly language is then discussed and the report concludes with the Charrette working notes that were compiled during the design effort. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

COMPILERS
LANGUAGE STRUCTURE
INTERMEDIATE LANGUAGES
ASSEMBLY LANGUAGE

AVAILABLE FROM: CARNEGIE-MELLON U.,C.S. DPT.ATTN: PUB,PITTSBURGH,PA
REPORT NUMBER: CMU-CS-80-148

SPONSORS: DEFENSE ADVANCED RESEARCH PROJECTS AGENCY,ARLINGTON,VA

DOCUMENT NUMBER: 4371 DOCUMENT DATE: 02/83 TYPE: TECHNICAL REPORT

FINAL REPORT/LARGE SCALE SOFTWARE SYSTEM DESIGN/AN/TYC-39 STORE AND FORWARD MESSAGE SWITCH USING THE ADA PROGRAMMING LANGUAGE: VOLUME I OF IV

STAFF AUTHOR, GENERAL DYNAMICS DATA SYSTEMS SERVICES,FORT WORTH,TX

This report, the first of four reports, provides a documented case study and analysis of the use of Ada* in the design, development, and implementation of a large scale digital message switching system. The details of the training of personnel in the use of Ada is reported and design issues relating to the design of the message switching system are discussed. A review of the requirements and design phase is also provided. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

EDUCATION
SYSTEM DESIGN
COMMUNICATIONS SWITCHING SYSTEMS
REQUIREMENTS

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: AD A123 304

SPONSORS: U.S.ARMY COMM-ELECTRONICS CMD(CECOM), FT. MONMOUTH, NJ

DOCUMENT NUMBER: 4372 DOCUMENT DATE: 02/83 TYPE: TECHNICAL REPORT

FINAL REPORT/LARGE SCALE SOFTWARE SYSTEM DESIGN/AN/TYC-39 STORE AND FORWARD MESSAGE SWITCH USING THE ADA PROGRAMMING LANGUAGE: VOLUME II OF IV

STAFF AUTHOR, GENERAL DYNAMICS DATA SYSTEMS SERVICES,FORT WORTH,TX

This report, the second of four reports, provides a documented case study and analysis of the use of Ada* in the design, development, and implementation of a large scale digital message switching system. The document introduces the Ada Integrated Methodology (AIM). Then, the Ada Requirements Methodology (ARM) is described, providing an overview of the functional and non-functional requirements, the concurrency requirements, and the requirements. Next, the Ada Design Methodology is examined and Ada development standards are reviewed. Finally, methodology experiences and recommendations are provided. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

REQUIREMENTS
REQUIREMENTS ENGINEERING
DESIGN METHODOLOGIES
COMMUNICATIONS SWITCHING SYSTEMS
STANDARDS

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: AD A123 305

SPONSORS: U.S.ARMY COMM-ELECTRONICS CMD(CECOM), FT. MONMOUTH, NJ

DOCUMENT NUMBER: 4373 DOCUMENT DATE: 02/80 TYPE: TECHNICAL REPORT

DEPARTMENT OF DEFENSE REQUIREMENTS FOR ADA PROGRAMMING SUPPORT ENVIRONMENTS: "STONEMAN"

DEPT. OF DEFENSE

This document specifies the requirements for an Ada* Programming Support Environment (APSE). It provides criteria for assessment and evaluation of APSE designs and offers guidance for APSE designers and implementers. The document provides some perspective concerning current practice and the mechanism for making the transition from current systems to the Ada environment. Next, general principles for the overall design of an APSE system is presented. Then, the requirements for the Kernel APSE (KAPSE) and minimal APSE (MAPSE) are presented. Finally, the document provides proposals for further components which are candidates for inclusion in an APSE. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS	DATABASE MANAGEMENT SYSTEMS	
KERNEL	DESIGN	REQUIREMENTS

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: AD A100 404

DOCUMENT NUMBER: 4374 DOCUMENT DATE: 11/79 TYPE: TECHNICAL REPORT

DEPARTMENT OF DEFENSE REQUIREMENTS FOR ADA LANGUAGE INTEGRATED COMPUTER ENVIRONMENTS: PRELIMINARY "STONEMAN"

DEPT. OF DEFENSE

This document specifies requirements for the structure and contents of an Ada* Language Integrated Computer Environment (ALICE) designed to support the development and maintenance of software, with particular concern for software for embedded computer applications. ALICE is a component of the Ada Language Environment (ALE) which was described in "Pebbleman". The document provides overall guidelines for an ALICE together with explanatory material intended to clarify the guidelines. Requirements for an initial ALICE are presented. Finally, conventions and standards applicable to certain aspects of ALICE are discussed. (*Ada is a traddemark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS	REQUIREMENTS	DESIGN
DATABASE MANAGEMENT SYSTEMS		COMMAND LANGUAGES

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA

DOCUMENT NUMBER: 4375 DOCUMENT DATE: 02/83 TYPE: TECHNICAL REPORT

FINAL REPORT/LARGE SCALE SOFTWARE SYSTEM DESIGN/AN/TYC-39 STORE AND FORWARD MESSAGE SWITCH USING THE ADA PROGRAMMING LANGUAGE: VOLUME IV OF IV

STAFF AUTHOR, GENERAL DYNAMICS DATA SYSTEMS SERVICES,FORT WORTH,TX

This report, the final report of four reports, provides a documented case study and analysis of the use of Ada* in the design, development, and implementation of a large scale digital message switching system. The design description presented in this report is organized into four major sections: (1) system design, (2) detail design, (3) detail hardware design, and (4) implementation. The system design section contains charts and diagrams from which the structure of the message switch was derived. The detail design section provides more specific details of system operation. The detail hardware design section provides some information required to implement the system as partitioned so that the messages can be processed within the constraints of the non-functional requirements. Finally, the implementation section describes the lowest level black diagram of the Line Termination Unit and an explanation of the intended method to dynamically allocate the tasks required for message output. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SYSTEM DESIGN STEPWISE REFINEMENT MODULAR DECOMPOSITION
DATA STRUCTURES COMMUNICATIONS SWITCHING SYSTEMS
IMPLEMENTATION

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: AD A123 307

SPONSORS: U.S.ARMY COMM-ELECTRONICS CMD(CECOM), FT. MONMOUTH, NJ

DOCUMENT NUMBER: 4376 DOCUMENT DATE: 02/83 TYPE: TECHNICAL REPORT

FINAL REPORT/LARGE SCALE SOFTWARE SYSTEM DESIGN/AN/TYC-39 STORE AND FORWARD MESSAGE SWITCH USING THE ADA PROGRAMMING LANGUAGE: VOLUME III OF IV

STAFF AUTHOR, GENERAL DYNAMICS DATA SYSTEMS SERVICES,FORT WORTH,TX

This report, the third of four reports, provides a documented case study and analysis of the use of Ada* in the design, development, and implementation of a large scale digital message switching system. The document first provides an overview of the message switching system. Then, the functional decomposition models and Ada functional requirements are presented. Finally, a listing of the data dictionary is provided and non-functional requirements are reviewed. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

REQUIREMENTS DATA STRUCTURES
COMMUNICATIONS SWITCHING SYSTEMS

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: AD A123 306

SPONSORS: U.S.ARMY COMM-ELECTRONICS CMD(CECOM), FT. MONMOUTH, NJ

DOCUMENT NUMBER: 4377 DOCUMENT DATE: 02/83 TYPE: TECHNICAL REPORT

FINAL REPORT/LARGE SCALE SOFTWARE SYSTEM DESIGN/MISSILE MINDER AN/TSQ-73 USING THE ADA PROGRAMMING LANGUAGE

STAFF AUTHOR, CONTROL DATA CORP.,SHREWSBURY,NJ

This report documents the research and development effort for the design and documentation of a large scale system using the Ada* programming language. The system is the Missile Minder System AN/TSQ-73. The report contains an executive summary as well as a technical report that contains activities and findings in the performance of the project. These activities and findings include adequacy of design methods used in the design of the AN/TSQ-73 system, system design issues, Ada language issues, and the career types required for the system design. The appendices contain the Ada System Designer's Guide, the system entity diagrams, an example of the Ada-based system design language, data flow diagrams, the data dictionary, structure charts, an example of the Ada-based program design language, and the Ada code listing. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

DESIGN METHODOLOGIES
HARDWARE/SOFTWARE TRADEOFFS
BALLISTIC MISSILE DEFENSE
PROGRAM DESIGN LANGUAGE (PDL)
SYSTEM DESIGN
WEAPONS SYSTEMS APPLICATIONS
PROGRAMMER TRAINING
DATA FLOWGRAPHS

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA

SPONSORS: U.S.ARMY COMM-ELECTRONICS CMD(CECOM), FT. MONMOUTH, NJ

DOCUMENT NUMBER: 4380 DOCUMENT DATE: 10/28/82 TYPE: TECHNICAL REPORT

KERNEL ADA PROGRAMMING SUPPORT ENVIRONMENT (KAPSE) INTERFACE TEAM: PUBLIC REPORT VOL. II

OBERNDORF, PATRICIA A.

This report gives an overview of the continuing activities of the Kernel Ada* Programming Support Environments (KAPSE) interface team and its industry/academia auxiliary. Included in this report is the minutes of the meetings held by the KAPSE Interface Team (KIT) and the KAPSE Interface Team from Industry/Academia (KITIA) for the period of 1 April 1982 to 28 October 1982. The final section of this report contains organizational documentation of KIT and KITIA. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

KNOWLEDGE BASED SYSTEMS
SYSTEM ARCHITECTURE
VALIDATION
PORTABILITY
TECHNOLOGY TRANSFER
REQUIREMENTS
RECOVERY
SOFTWARE TOOL SYSTEMS
EXTENSIBILITY
STANDARDS
SIMULATORS
INTEROPERABILITY
INTERFACE CONTROL

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: AD A123 136
REPORT NUMBER: NOSC TD 552

SPONSORS: ADA JT. PROG. OFF., ARLINGTON, VA 22209

DOCUMENT NUMBER: 4400 TYPE: PAPER

THE PROCESS VIEW OF SIMULATION IN ADA

LOMOW, GREG; UNGER, BRIAN
PROCEEDINGS OF THE 1982 WINTER SIMULATION CONFERENCE, PP. 76-86, 1982

This paper describes a discrete event simulation language called Simulation and Modeling on Ada* (SAMOA). A brief description of SIMULA is first provided. Then, Ada's suitability as the base language for SAMOA is discussed. The authors then show how models are represented in SAMOA and discuss what modeling facilities are provided by SAMOA. An example simulation is also defined using this package. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

PROCESS SIMULA

AVAILABLE FROM: IEEE SERVICE CENTER,445 HOES LA,PISCATAWAY,NJ 08854
ORDER NUMBER: 82CH1844-0

DOCUMENT NUMBER: 4401 TYPE: PAPER

ASSE - ADA SIMULATION SUPPORT ENVIRONMENT

ADELSBERGER, HEIMO H.
PROCEEDINGS OF THE 1982 WINTER SIMULATION CONFERENCE, PP. 88-101, 1982

This paper introduces the Ada* Simulation Support Environment (ASSE). Simulation procedures are briefly discussed and arguments are given as to why one language is more suitable for simulation than another. Next, features of Ada are discussed. Finally, the development of ASSE is reviewed. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

MODELLING AND SIMULATION TOOLS QUEUING
SIMULATION LANGUAGES

AVAILABLE FROM: IEEE SERVICE CENTER,445 HOES LA,PISCATAWAY,NJ 08854
ORDER NUMBER: 82CH1844-0

DOCUMENT NUMBER: 4402 TYPE: PAPER

A TUTORIAL ON DISCRETE-SYSTEM SIMULATION IN ADA

BRYANT, RAYMOND M.
PROCEEDINGS OF THE 1982 WINTER SIMULATION CONFERENCE, PP. 642-644, 1982

This paper provides a brief introduction to those features of Ada* suitable for the construction of discrete-system simulations and outlines the implementation of a process-oriented simulation in Ada. The paper also describes how a SIMULA-like "hold" procedure can be implemented as a package in Ada. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

MODELLING AND SIMULATION TOOLS SIMULA

AVAILABLE FROM: IEEE SERVICE CENTER,445 HOES LA,PISCATAWAY,NJ 08854
ORDER NUMBER: 82CH1844-0

SPONSORS: WISCONSIN ALUMNI RESEARCH FOUNDATION;
NATIONAL SCIENCE FOUNDATION

DOCUMENT NUMBER: 4403 TYPE: JOURNAL ARTICLE

ADA BIBLIOGRAPHY

WAND, IAN C.; ZALEWSKI, JANUSZ; YOUNG, RAY P.
REAL-TIME DATA NEWS, ISSUE 7, 54 P., 11/82

This bibliography offers a world-wide coverage of literature about the Ada* programming language. The bibliography lists approximately 600 citations of documents, the majority of which are English-language documents. The bibliography is made up of journal articles, papers from conference proceedings, technical reports, and language requirements and specification documents. Each citation contains author name(s), a title, the source of the document, the date, and usually a pagination statement. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

LANGUAGE EVALUATION	DESIGN	LANGUAGE STRUCTURE
DATA TYPES	SOFTWARE TOOL SYSTEMS	CORAL
RTL/2	COMPILERS	INTERMEDIATE LANGUAGES
PASCAL	PEARL	ALGOL
LANGUAGE DESIGN	SEMANOL	EDUCATION
PROGRAM DESIGN LANGUAGE (PDL)		

DOCUMENT NUMBER: 4404 TYPE: JOURNAL ARTICLE

ADA BIBLIOGRAPHY

WAND, IAN C.; ZALEWSKI, JANUSZ
B.I.G.R.E, ISSUE 27, 21 P., 12/81

This bibliography offers a world-wide coverage of literature about the Ada* programming language. The bibliography lists 397 citations of documents, the majority of which are English-language documents. The bibliography is made up of journal articles, papers from conference proceedings, technical reports, and language requirement and specification documents. Each citation contains author name(s), a title, the source of the document, the date, and usually a pagination statement. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

LANGUAGE EVALUATION	DESIGN	LANGUAGE STRUCTURE
DATA TYPES	SOFTWARE TOOL SYSTEMS	CORAL
RTL/2	COMPILERS	INTERMEDIATE LANGUAGES
PASCAL	PEARL	ALGOL
LANGUAGE DESIGN		

DOCUMENT NUMBER: 4405 DOCUMENT DATE: 06/82 TYPE: DISSERTATION

A MICROPROGRAMMED PROCESSOR IMPLEMENTATION OF A SUBSET ADA CODE

LANG, LARRY E.

This report describes a machine microprogramming and support software generation effort to enable the execution of Ada* programs on a small embedded computer. The microprogrammable minicomputer emulator (MIME) resident in the Air Force Institute of Technology (AFIT) Digital Engineering Laboratory is used as the Ada target machine. The author gives some general requirements which were established to insure that the thesis effort produced a useable tool for investigating Ada. The definition of the MIME "A-Machine" is then discussed. Next, the author discusses the MIME hardware changes and support software programs generated to support both this and follow-on thesis efforts. The microcode design and testing are then described. To illustrate this design and the testing involved, a detailed walk-through of a multi-tasking Ada program is given. Finally, the results, recommendations, and conclusions are given. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

MICROPROGRAMS
COMPILERS
EMBEDDED COMPUTER SYSTEMS
MICROCODE
PROGRAM DESIGN LANGUAGE (PDL)
EMULATION
DISTRIBUTED PROCESSING
TEST METHODOLOGIES

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: AD A118 073
REPORT NUMBER: AFIT GCS/EE/82J-6

DOCUMENT NUMBER: 4406 TYPE: PAPER

TOWARDS A COMPUTER-BASED ADA EDUCATIONAL ENVIRONMENT

WEGNER, PETER
UNPUBLISHED PAPER OR REPORT, 11 P., 03/03/82

This paper examines a project concerned primarily with the development of a computer - based environment for the teaching of Ada*. The author starts by describing the rationale behind the development of text modules. He then examines system development and educational issues that are independent of a particular knowledge domain (Ada). Work on document databases, personal computing environments and computer aided instruction relevant to the development of an educational utility is reviewed. Requirements and implementation issues are considered. Finally, the creation of an educational environment is viewed as an exercise in "knowledge engineering". (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

EDUCATION
KNOWLEDGE BASED SYSTEMS
USER-INTERACTIVE SYSTEMS
ARTIFICIAL INTELLIGENCE

AVAILABLE FROM: ADA PROGRAM OFFICE, 801 N. RANDOLPH ST, ARLINGTON,VA

DOCUMENT NUMBER: 4407 DOCUMENT DATE: 09/80 TYPE: TECHNICAL REPORT

ADA LANGUAGE SYSTEM QUALITY ASSURANCE PLAN

STAFF AUTHOR, SOFTECH,INC. TOTTEN POND RD,WALTHAM,MA 02154

This document describes the procedures that will be used to perform the quality assurance for the Ada* Language System (ALS) development effort. The Quality Assurance Department role is described and individual responsibilities and reporting channels are explained that relate to the quality assurance. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS QUALITY ASSURANCE

AVAILABLE FROM: SOFTECH, INC., 460 TOTTEN POND RD, WALTHAM, MA 02154
REPORT NUMBER: 1075D-53002-8009

DOCUMENT NUMBER: 4408 DOCUMENT DATE: 04/83 TYPE: TECHNICAL REPORT

ADA LANGUAGE SYSTEM DESIGN AND DEVELOPMENT PLAN

STAFF AUTHOR, SOFTECH,INC. TOTTEN POND RD,WALTHAM,MA 02154

This document is the design and development plan which identifies and describes by function and schedules all tasks necessary to complete the statement of work for the Ada* Language System (ALS). The techniques and methodologies to be used to perform this work are identified and described in this plan. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS KERNEL

AVAILABLE FROM: SOFTECH, INC., 460 TOTTEN POND RD, WALTHAM, MA 02154
REPORT NUMBER: 1075-510007

SPONSORS: U.S.ARMY COMM-ELECTRONICS CMD(CECOM), FT. MONMOUTH, NJ

DOCUMENT NUMBER: 4409 DOCUMENT DATE: 11/21/80 TYPE: TECHNICAL REPORT

COMPARATIVE ANALYSIS OF THE ADA AND CHILL PROGRAMMING LANGUAGES

COHEN, PAUL

This report presents the results of a comparative analysis between the CHILL and Ada* programming languages. The approach taken in this analysis effort was to perform an exhaustive feature-by-feature comparison of the languages and the programming environments to determine if Ada can be used as a suitable replacement for CHILL. The feature-by-feature comparison demonstrates that the language differences are minor. The examination of the Ada Programing Support Environment (APSE) and the programming environment of CHILL, SDL, and MML is then presented. It is seen that no dependency exists between the CHILL,SDL, and MML elements, and as such, no restriction is placed on their portability because of a dependency. It is concluded that Ada can replace CHILL in a CHILL/SDL/MML environment, but that a more attractive approach is to incorporate the SDL and MML tools into the APSE. These conclusions, along with other relevant issues, are presented. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

LANGUAGE EVALUATION EXCEPTION HANDLING SOFTWARE TOOL SYSTEMS

AVAILABLE FROM: THE AUTHOR

DOCUMENT NUMBER: 4410 DOCUMENT DATE: 03/08/79 TYPE: SPECIFICATION

ADA SUPPORT SYSTEM STUDY - PHASE 1 REPORT - REQUIREMENTS AND SPECIFICATION

STAFF AUTHOR, SYSTEMS DESIGNERS LIMITED, UNITED KINGDOM;
STAFF AUTHOR, SOFTWARE SCIENCES LTD., UNITED KINGDOM

This document briefly discusses several miscellaneous points which were given explicit consideration when producing the requirements and functional specifications for the Ada* Support System Study. Among the points discussed are the high cost of software, the need for iteration in the software development process, the need for progress monitoring and project control, and the difficulty in introducing a new language. The requirements specification is then presented and the user facilities are reviewed. Finally, the general functions included within the common support system model are examined. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

REQUIREMENTS SPECIFICATIONS CONFIGURATION MANAGEMENT

AVAILABLE FROM: THE AUTHOR

DOCUMENT NUMBER: 4411 DOCUMENT DATE: 11/81 TYPE: TECHNICAL REPORT

THE DESIGN OF AN ADA COMPATIBLE LOCAL DATABASE MANAGER (LDM)

CHAN, ARVOLA; FOX, STEPHEN A.; LIN, WEN-TE K.; RIES, DANIEL

This report describes the design of a high performance Local Database Manager (LDM) to support the ADAPLEX language. The ADAPLEX language is an integrated language for programming database applications and results from the embedding of the database sublanguage DAPLEX in the ADA* programming language. The report highlighs ADAPLEX and the innovative aspects of the system design that are intended to yield good performance. The authors describe the process of decomposition of ADAPLEX transactions into their DAPLEX and Ada components in order to faciliate access path optimization. The authors also show the parameterization of the level of optimization in order to permit more thorough optimization for repetitive transactions. The authors then discuss the provision for flexible physical structuring options and reorganization utilities in order to allow the tuning of database organizations. Finally the authors describe mechanisms for concurrency control and recovery. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

DATA STRUCTURES SYNCHRONIZATION RECOVERY
RELATIONAL DATA MODEL OPTIMIZATION

AVAILABLE FROM: THE AUTHOR
REPORT NUMBER: CCA-81-09

SPONSORS: DEFENSE ADVANCED RESEARCH PROJECTS AGENCY,ARLINGTON,VA

DOCUMENT NUMBER: 4413 DOCUMENT DATE: 04/80 TYPE: DISSERTATION

ADA TASKING

HEKER, WOLF-DIETER

This thesis analyzes the tasking concept of the Ada* programming language and shows an implementation technique that is almost independent of the target machine. Rules are given as to how to transform tasking constructions to simple instructions and calls of system operations. The system operations themselves are described in Ada as far as possible. Basic operations that are not expressible in Ada are specified in a general manner. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

TRANSFORMATION	SYNCHRONIZATION	CONCURRENT PROGRAMMING
COMPILERS	QUEUING	MONITORS
MEMORY MANAGEMENT		

AVAILABLE FROM: THE AUTHOR

DOCUMENT NUMBER: 4414 DOCUMENT DATE: 03/15/79 TYPE: TECHNICAL REPORT

PROPOSAL FOR THE IMPLEMENTATION OF THE PEARL I/O CONCEPT IN THE ADA HIGH-ORDER LANGUAGE

MUSCHIK, HANS J.

This report shows how the PEARL real-time programming language might be integrated with the Ada* high order language. First, a general description of the input/output and system division of PEARL is given. Based on the PEARL concepts, a number of proposals for an input/output package to be used in Ada are presented. The advantages of the proposals presented are then discussed and future tasks are proposed. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

PEARL	REAL-TIME SYSTEMS

AVAILABLE FROM: THE AUTHOR

SPONSORS: MINISTRY OF DEFENSE OF THE FEDERAL REPUBLIC OF GERMANY

DOCUMENT NUMBER: 4415 TYPE: TEXT

SOFTWARE ENGINEERING WITH ADA

BOOCH, GRADY

This textbook describes the details of Ada* programming and suggests ways in which to best apply the features of the language in the creation of software systems. The author begins with a look at the Ada problem domain. He examines Ada's development history in order to provide a perspective on some of the features of the language. Then, a number of modern software development principles are examined and the object-oriented design methodology is introduced, a detailed presentation of Ada as an embodiment of these methodologies is provided, built around five complete design examples. Next, in the chapters between these five large examples, a detailed discussion of Ada's constructs is presented. The book concludes with an examination of the Ada Programming Support Environment (APSE), plus the application of Ada across the software life cycle. The book also contains seven appendices that provide further technical details of Ada. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS	LANGUAGE DESIGN	LANGUAGE STRUCTURE
DESIGN METHODOLOGIES	DEVELOPMENTAL TOOLS AND TECHNIQUES	

MANAGEMENT TOOLS AND TECHNIQUES
SOFTWARE ENGINEERING TOOLS AND TECHNIQUES
DATA TYPES
INFORMATION HIDING
INDUSTRIAL PROCESS APPLICATIONS
PROGRAMMING TECHNIQUES/METHODOLOGIES
EXCEPTION HANDLING
EMBEDDED COMPUTER SYSTEMS
DATA STRUCTURES
SOFTWARE LIFE CYCLE
REAL-TIME SYSTEMS

DOCUMENT NUMBER: 4416 TYPE: JOURNAL ARTICLE

CONSTRAINT CHECK ELIMINATIONS

MORGAN, C. ROBERT
INTERMETRIC'S ADA UPDATE, VOL 6, PP. 1-7, 01/83

This article describes a list of techniques being used in the Ada* Integrated Environment (AIE) Ada compiler to eliminate redundant checks while maintaining the full safety of complete checking. Several teechniques proposed by others are first reviewed. Next, techniques are given for checking access variables that are not null, checking for valid record tags, and checking approximate range analysis in loops. (*Ada is a trademark of the U.S. department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS
COMPILERS
AUTOMATED FAULT DETECTION

SPONSORS: U.S.AIR FORCE;
INTERMETRICS,INC.,CAMBRIDGE,MA 02138

DOCUMENT NUMBER: 4417 TYPE: PAPER

MAPPING HIGH-ORDER LANGUAGE PROGRAM UNITS INTO VLSI STRUCTURES

ORGANICK, ELLIOTT I.; LINDSTROM, GARY
COMPCON '82, PP. 15-18, 1982

This paper discusses a transformation methodology for mapping significant parts of high order language programs, such as Ada*, into VLSI circuits and connecting them, as operating parts of a larger "containing" program. Initial driving concepts for the proposed mapping process are outlined and one example of realistic proportions, being used as a demonstration vehicle for the study, is cited. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

FIRMWARE

AVAILABLE FROM: IEEE SERVICE CENTER,445 HOES LA,PISCATAWAY,NJ 08854
ORDER NUMBER: 82CH1739-2

DOCUMENT NUMBER: 4418 TYPE: JOURNAL ARTICLE

DESPITE SOME RISKS, FUTURE APPEARS PROMISING FOR ADA

WOOD, PAUL
SPERRY UNIVAC NEWSBRIEFS, VOL 9, ISSUE 1, PP. 6-13, 01/83

This article provides an overview of the Ada* language and the status of its implementation within the tri-services. The activities of the Ada Joint Program Office (AJPO) are briefly reviewed. Various features and implementation considerations (i.e., portability, training, life cycle costs, etc.) are then examined. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

TRI-SERVICE LIFE CYCLE COSTS PROGRAMMER TRAINING
PORTABILITY

DOCUMENT NUMBER: 4419 DOCUMENT DATE: 11/14/79 TYPE: TECHNICAL REPORT

AIDA - AN INTERMEDIATE REPRESENTATION OF ADA PROGRAMS

DAUSMANN, MANFRED; PERSCH, GUIDO; WINTERSTEIN, GEORG

This report summarizes the studies which were conducted for choosing a suitable representation for Ada* programs in a compiler. The requirements for such and intermediate language are evaluated first. Then, the authors look at existing intermediate languages whether they meet these requirements. Two languages designed for Ada are studied. From this comparison, the authors make a global decision for the design of AIDA. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

INTERMEDIATE LANGUAGES

AVAILABLE FROM: THE AUTHOR

DOCUMENT NUMBER: 4420 DOCUMENT DATE: 10/17/79 TYPE: TECHNICAL REPORT

NOTES ON TCOL

DAUSMANN, MANFRED; PERSCH, GUIDO; WINTERSTEIN, GEORG

This report presents some ideas about TCOL-Ada* that have arisen during the process of choosing an intermediate language. The ideas are grouped into three parts reflecting the representation of objects and operators, as well as the notation used in the language. The authors also consider the standardization of intermediate representations of Ada programs. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

INTERMEDIATE LANGUAGES STANDARDIZATION

AVAILABLE FROM: THE AUTHOR
REPORT NUMBER: AIDA-01

DOCUMENT NUMBER: 4421 DOCUMENT DATE: 10/80 TYPE: TECHNICAL REPORT

DESIGN ISSUES FOR ADA PROGRAM SUPPORT ENVIRONMENTS - A CATALOGUE OF ISSUES

FISHER, DR. DAVID A.

This report catalogues many of the design decisions necessary to the design of an Ada* Program Support Environment (APSE). The emphasis is on those design decisions which affect the APSE users and tool builders. The catalogue includes both design decisions and conventions on the form function and performance of the various internal and external interfaces, but does not address other design decisions critical to the implementation and internal representations of the kernel APSE (KAPSE). (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS KERNEL COMMAND LANGUAGES

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: 3456
REPORT NUMBER: SAI-81-289-WA

SPONSORS: DEFENSE ADVANCED RESEARCH PROJECTS AGENCY,ARLINGTON,VA

DOCUMENT NUMBER: 4422 TYPE: JOURNAL ARTICLE

SIMPLIFYING ADA BY REMOVING LIMITATIONS

BOUTE, RAYMOND T.
ACM SIGPLAN NOTICES, VOL 15, ISSUE 2, PP. 17-28, 02/80

In this article, the author explains that Ada* contains several rather arbitrary restrictions making the language unnecessarily complex, lacking in orthogonality, and difficult to extend. The author illustrates how the elmination of such restrictions yields a simpler yet more powerful language. Particular suggestions made by the author are the following: (1) a more flexible and natural interpretation of type equivalence removes the stringent limitations of the Ada name equivalence approach; (2) providing a uniform view on types, subprograms, and modules solves most parameterization problems and dispenses with the need for a "generic" construct; and (3) a more complete specification for subprograms (and modules) removes some difficulties with side-effects and exception handling. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

DATA TYPES DATA STRUCTURES EXCEPTION HANDLING
LANGUAGE STRUCTURE

DOCUMENT NUMBER: 4423 TYPE: JOURNAL ARTICLE

OPERATOR IDENTIFICATION IN ADA: FORMAL SPECIFICATION, COMPLEXITY, AND CONCRETE IMPLEMENTATION

GANZINGER, HARALD; RIPKEN, KNUT
ACM SIGPLAN NOTICES, VOL 15, ISSUE 2, PP. 30-42, 02/80

This article discusses operator identification and overloading rules in Ada*. A formal basis for the specification of the overloading rules and for the analysis of operator identification algorithms is outlined first. The authors then present and prove correct an operator identification strategy which uses, at most, four depth-first (i.e., top down) passes over each expression tree with each node being visited at most six times. Next, the authors discuss some aspects of the implementation of operator identification in the Ada Test Translator (TT), which was developed by Honeywell Systems and Research Center and CII-Honeywell Bull. The TT implements the identification strategy outlined formally in this article. The authors show, however, that the way in which type sets are initialized at expression tree roots and intersected depends on other implementation decisions. Finally, the authors close the article with some remarks on the overall complexity of the identification algorithm. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

LANGUAGE STRUCTURE

DOCUMENT NUMBER: 4424 DOCUMENT DATE: 04/11/79 TYPE: TECHNICAL REPORT

THE GREEN LANGUAGE: AN INFORMAL INTRODUCTION

STAFF AUTHOR, HONEYWELL SYSTEMS & RESEARCH CNTR, MINNEAPOLIS, MN;
STAFF AUTHOR, CII-HONEYWELL BULL, LOUVECIENNES, FRANCE

This document is an introduction to the Green programming language, the forerunner of the Ada* programming language. The document emphasizes the concepts that form the foundation of the language, rather than attempting to describe the entire language or to provide a self-contained guide for writing programs. The opening chapter provides a very brief sketch of the facilities that have an analogue in many other high order languages. The discussion is based on four small example programs. Next, the document treats the notion of data types, the basic statements in the language, and the facilities for writing subprograms. The final chapters concentrate on the development of program packages, parallel processing, exception handling, the interface with an implementation, and separate translation. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

DATA TYPES EXCEPTION HANDLING
PROGRAMMING TECHNIQUES/METHODOLOGIES

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: AD A070753

SPONSORS: DEFENSE ADVANCED RESEARCH PROJECTS AGENCY,ARLINGTON,VA

DOCUMENT NUMBER: 4425 DOCUMENT DATE: 03/17/82 TYPE: TECHNICAL REPORT

ADA PROCESS DESCRIPTION LANGUAGE GUIDE

GRAU, DR. KAYE; COMER, ED; DYSON, PETE; KRASNER, HERB

This document defines the Ada* Process Description Language (PDL) and provides a guide to its application. The document is partitioned into an introduction section, a language description section, and a user's guide. Following the introduction, the Ada PDL is defined. The final section, the user's guide, provides recommendations and guidelines for the application of Ada PDL. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

PROCESS DESIGN LANGUAGE (PDL) DATA TYPES
SPECIFICATIONS PARTITIONING

AVAILABLE FROM: THE AUTHOR

DOCUMENT NUMBER: 4426 DOCUMENT DATE: 1982 TYPE: TECHNICAL REPORT

MODULAR COMPILATION SYSTEMS FOR HIGH LEVEL PROGRAMMING LANGUAGES

CURRIE, I.F.; PEELING, N.E

This report presents some conclusions from the experience gained by the different implementations of modular compilation in ALGOL 68. Experience with modular programming techniques is discussed. The authors then examine the relative advantages and disadvantages of the ALGOL 68-R system, the proposed standard for ALGOL 68, the modules system for the R5 ALGOL 68 compiler, and the proposed standard for Ada*. The authors hope that experience gained with ALGOL will be useful in the development of Ada. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

ALGOL MODULARITY
PROGRAMMING TECHNIQUES/METHODOLOGIES

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: AD A121 550
REPORT NUMBER: RSRE MEMO NO. 3460

DOCUMENT NUMBER: 4427 TYPE: PAPER

A PRELIMINARY EVALUATION OF VERIFIABLITY IN ADA

TRIPATHI, A.R.; YOUNG, W.D.; GOOD, D.I.
PROCEEDING, 1980 ANNUAL CONFERENCE OF ACM, PP. 218-224, 10/29/80

This paper examines Ada* with regard to program verification and makes certain suggestions towards writing potentially provable Ada programs. The authors attempt to isolate and discuss those features of Ada which are not susceptible to current verification techniques. The criteria under which the language evaluation was carried out are first described. Then these criteria are applied to various areas of the Ada design: data types, non-local referencing, multitasking, exception handling, and generics. In some instances restrictions are proposed which, either by incorporation into the language definition or by imposition as a programmer discipline, may aid in writing verifiable Ada programs. Finally, the conclusions of the research are discussed. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

VERIFICATION TOOLS AND TECHNIQUES DATA TYPES
EXCEPTION HANDLING LANGUAGE EVALUATION

AVAILABLE FROM: ACM,INC., 1133 AVE. OF AMERICAS, NY,NY 10036

SPONSORS: DEFENSE ADVANCED RESEARCH PROJECTS AGENCY,ARLINGTON,VA

DOCUMENT NUMBER: 4428 DOCUMENT DATE: 05/12/82 TYPE: DISSERTATION

RAPID SOFTWARE PROTOTYPING

SMITH, DAVID A.

This dissertation provides concepts, techniques, and a philosophy of rapid software prototyping and characterizes the benefits and limitations of its use. It also considers programming environments which support rapid prototyping. An experimental language, Castor, is described which was implemented to validate this approach in the prototyping of Ada* programs. The principles of prototyping are reviewed and the concept of prototyping is compared with prototyping as used in other engineering disciplines. A number of different approaches which can be used in rapid prototyping are then shown. The remainder of the document reviews Ada programming techniques applicable to software prototyping, related projects, and proposes future research work to be accomplished. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS	PROGRAM DESIGN LANGUAGE (PDL)	
STEPWISE REFINEMENT	PROTOTYPES	PROGRAM TRANSFORMATIONS
REUSABILITY	SOFTWARE LIFE CYCLE	ASSEMBLERS
MICROPROGRAMS	PROGRAMMING TECHNIQUES/METHODOLOGIES	

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
REPORT NUMBER: 187

SPONSORS: DEFENSE ADVANCED RESEARCH PROJECTS AGENCY,ARLINGTON,VA

DOCUMENT NUMBER: 4429 TYPE: PAPER

PROBLEMS IN COMPILING ADA

GOOS, GERHARD; WINTERSTEIN, GEORG
TRENDS IN INFO PROC SYS,3RD CONF.EURO CORP INFORMATIC, PP. 174-199, 10/22/81

This paper outlines the structure of a compiler for Ada*, subdivided into a machine-independent front-end and machine-dependent back-ends. Then, the authors discuss the methods which were applied to solve the problems arising in the design of the front-end. Finally, the authors give a short overview of the intermediate language DIANA which has been specifically designed to represent Ada programs in intermediate form. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

INTERMEDIATE LANGUAGES	COMPILERS	SOFTWARE TOOL SYSTEMS

AVAILABLE FROM: SPRINGER-VERLAG, INC., NEW YORK NY 10010

DOCUMENT NUMBER: 4430 TYPE: TEXT

THE ADA PROGRAMMING LANGUAGE - A GUIDE FOR PROGRAMMERS

PYLE, I.C.

Incorporating all the facilities of Ada* and the latest developments in the language, this textbook provides a comprehensive introduction to the language. Particular emphasis is placed upon its use in the programming of real-time or embedded computer systems. After an overview of Ada and its programming environment is given in the introduction, the author reviews the concept of types and values. Then, the author explains the rules for writing expressions in Ada, first for particular types of data then in general. Procedure call statements are then introduced, as well as the concept of subprograms. Exception handling facilities are described and packages are discussed. Parallel programming techniques are examined, as well as the manner of development and modification of the program text itself. The author then considers how to design and construct an Ada program from a number of compilation units, how to express the relationship between them, and what the consequences of these relationships are in terms of the order in which compilation units are handled. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

DATA TYPES	EXCEPTION HANDLING	DISTRIBUTED PROCESSING
PROGRAMMING TECHNIQUES/METHODOLOGIES		DATA STRUCTURES
LANGUAGE STRUCTURE	REAL-TIME SYSTEMS	
EMBEDDED COMPUTER SYSTEMS		

DOCUMENT NUMBER: 4431 DOCUMENT DATE: 07/82 TYPE: BIBLIOGRAPHY

CITATIONS FROM THE INSPEC DATABASE - ADA PROGRAMMING LANGUAGE (JAN 79 - JUL 82)

STAFF AUTHOR, NEW ENGLAND RESEARCH APPLICATIONS CENTER, STORRS, CT

This bibliography contains 216 citations concerning the high order programming language Ada*. The abstracts reference reports, journal articles, and conference papers on the design, implementation, grammar, compilers, and programming methodology for Ada. Many references pertain to microcomputers designed to use Ada, and other references discuss implementation problems. Many examples are given for using Ada in real-time programming and multiprogramming applications. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

DATA TYPES	LANGUAGE DESIGN	LANGUAGE STRUCTURE
SOFTWARE TOOL SYSTEMS	COMPILERS	PASCAL
LANGUAGE EVALUATION	PEARL	
PROGRAMMING TECHNIQUES/METHODOLOGIES		MICRO COMPUTERS
REAL-TIME SYSTEMS	EMBEDDED COMPUTER SYSTEMS	
MULTIPROGRAMMING		

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: PB82-872201

DOCUMENT NUMBER: 4433 TYPE: PAPER

THE GANDALF SOFTWARE DEVELOPMENT ENVIRONMENT

HABERMANN, A.N.; NOTKIN, DAVID S.
2ND COMPENDIUM OF GANDALF DOCUMENTATION, 18 P., 05/24/82

This paper addresses several differences between software development environments (SDEs) and existing operating systems and programming environments. First, the authors describe the common properties of all environments produced by the Gandalf system and introduces the ALOE (A Language Oriented Editor). Next, the authors discuss the generation of new Gandalf environments from the Gandalf system. Then, the authors compare Gandalf to some of the other projects in software development environment research, including the Ada* Programming Support Environment (APSE). Future plans of the Gandalf project are discussed briefly and the conclusions of the paper then given. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS EDITORS

AVAILABLE FROM: CARNEGIE-MELLON U.,C.S. DPT,ATTN: PUB,PITTSBURGH,PA

SPONSORS: US ARMY CENTACS/CORADCOM FT. MONMOUTH,NJ

DOCUMENT NUMBER: 4451 TYPE: TEXT

A COMPLETE INTRODUCTION TO ADA

YOUNG, S.J.

This book provides a complete introduction to programming in Ada*. All Ada language features are carefully explained and wherever possible illustrated by examples. A key feature of the book is the inclusion of an extended example at the end of each chapter. The book reviews data types, declarations, subprograms, tasks, exception handling, generic program units, and input/output mechanisms. Strong emphasis is placed on the use of the package in supporting data abstraction. Finally, exercises are provided with each chapter and solutions to a selection of these are given at the end of the book. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

LANGUAGE STRUCTURE DATA TYPES EXCEPTION HANDLING

DOCUMENT NUMBER: 4452 TYPE: TECHNICAL REPORT

FINAL REPORT DEVELOPED FOR LARGE SCALE SOFTWARE SYSTEM DESIGN OF THE AN/TYC-39 STORE AND FORWARD MESSAGE SWITCH USING THE ADA PROGRAMMING LANGUAGE

STAFF AUTHOR, GENERAL DYNAMICS DATA SYSTEMS SERVICES,FORT WORTH,TX

This report discusses the Ada* Capability Study as performed by the Data Systems Division (DSD) of General Dynamics Corporation. The tasks during the performance of this contract are examined and the details of the training of personnel is provided. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

LANGUAGE STRUCTURE REQUIREMENTS ANALYSIS

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: AD A123304

SPONSORS: U.S.ARMY COMM-ELECTRONICS CMD(CECOM), FT. MONMOUTH, NJ

DOCUMENT NUMBER: 4502 DOCUMENT DATE: 02/82 TYPE: TECHNICAL REPORT

VHSIC PHASE III SOFTWARE ARCHITECTURE STUDY. PART II. SYSTEM SPECIFICATION FOR THE VHSIC SUPPORT SOFTWARE SYSTEM (TYPE A)

BRABSTON, DONALD C.; JONES, JR. W.D.

This document is a Type A military standard specification of the VHSIC Support Software System (VSSS). The VSSS is intended to provide a complete software development environment for a broad class of signal processors to be designed and developed using VHSIC technology. The document covers the functional requirements of the VSSS components, their interfaces, VSSS databases, and external interfaces to the Ada* Integrated Environment and VSSS users. The document is prepared in accordance with MIL-STD-490 and MIL-STD-483. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

MODELLING AND SIMULATION TOOLS ARCHITECTURE
COMPILERS

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: AD B067900
REPORT NUMBER: AFWAL-TR-81-1248, PARTII

SPONSORS: U.S.A.F. AVIONICS LAB,W-PAFB,OH 45433

DOCUMENT NUMBER: 4503 DOCUMENT DATE: 02/82 TYPE: TECHNICAL REPORT

VHSIC PHASE III SOFTWARE ARCHITECTURE STUDY. PART I. FINAL REPORT

BRABSTON, DONALD C.; JONES, JR. W.P.

This report is the final report of the Very High Speed Integrated Circuits (VHSIC) Phase III software architecture study. The report documents the tradeoffs and design approach studied during the project. The system concept is first given. The authors studied six application areas of signal processing with regard to what functions, data types, and control structures must the VHSIC Supprot Software System (VSSS) components and High Order Language (HOL) support. The results of this task are summarized. The results of the hardware architecture definition are then presented. Next, the HOL definition subtask is presented and comments regarding the use of Ada* are given. A study of hardware description languages is then reviewed. The results of the compiler design task are provided, as well as the system simulator design task. Then, the software verification methodology being used in VSSS is described and the Diagnostics Generator is presented. Finally, the authors present recommendations for the next steps in implementing the VSSS. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

MODELLING AND SIMULATION TOOLS ARCHITECTURE
COMPILERS MICROCODE VERIFICATION

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: AD B67869
REPORT NUMBER: AFWAL-TR-81-1248, PARTI

SPONSORS: U.S.A.F. AVIONICS LAB,W-PAFB,OH 45433

DOCUMENT NUMBER: 4527 TYPE: JOURNAL ARTICLE

REAL-TIME PROGRAMMING LANGUAGES

HENRY, ROGER
INTERNATIONAL JOURNAL OF MAN-MACHINE STUDIES, VOL 14, ISSUE 3, PP. 355-369, 04/81

This article concentrates on a comparison of the more important language features that have emerged in modern real-time languages and distinguishes three main themes: in encapsulation, parallel processing and low-level imput/output. Several languages are compared in relation to those themes. The languages include the Computer On-line Real-time Application Language (CORAL), RTL/2, Concurrent Pascal, Modula, and Ada*. It is concluded that a system programming language can meet the needs of a wide range of psychology laboratory applications. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

CORAL	RTL/2	MODULARIZATION
DISTRIBUTED PROCESSING	MUTUAL EXCLUSION	C LANGUAGE
MODULA	REAL-TIME SYSTEMS	LANGUAGE EVALUATION
CONCURRENT PASCAL	SYNCHRONIZATION	MONITORS
KERNEL		

DOCUMENT NUMBER: 4528 TYPE: JOURNAL ARTICLE

MODULA AND VISION LABORATORY

RUNCIMAN, COLIN
INTERNATIONAL JOURNAL OF MAN-MACHINE STUDIES, VOL 14, ISSUE 3, PP. 371-386, 04/81

In this article, a short description of Modula, the high-level language for real-time parallel programming concentrates on its distinctive features as compared with Pascal. In particular the process, signal and three types of module are considered. The Visual Research Worker (VRW), a vision laboratory control program written in Modula is introduced. Its complete module and process structure is presented in support of the argument that Modula allows a most attractive program architecture which matches that of the laboratory and the experimental control problem. Detailed fragments of VRW are presented to illustrate the capabilities of Modula with special attention to device handling. Further benefits of the Modula discipline such as the inherent confidence possible in solutions and the merits of the module as a unit for software construction are discussed. In examining means of control over the use of machine-store, scalar types and, more particularly, the timing of events, weaknesses in Modula are noted, discussed and compared to Ada*. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

MODULA	LANGUAGE EVALUATION	PASCAL
REAL-TIME SYSTEMS		

DOCUMENT NUMBER: 4529 TYPE: JOURNAL ARTICLE

PROGRAM DEVELOPMENT AND RUNNING ON HOST/TARGET SYSTEMS

ARBLASTER, ANDREW
INTERNATIONAL JOURNAL OF MAN-MACHINE STUDIES, VOL 14, ISSUE 3, PP. 387-394, 04/81

This article examines the need for separate development and running environments. The questions of whether a single set of software tools will fulfill all of the requirements for the range of applications which may be met and whether a single set of tools is desirable are examined in the article. Comments are made as to the suitability of certain features of such languages as APL and Ada* towards the requirements of a development environment. Benefits and disadvantages of UNIX** as an environment are given. Finally, requirements for a development environment are specified by examining the U.S. Department of Defense portability requirements of the STONEMAN document and issues related to local area networks such as the Cambridge Ring are discussed. (*Ada is a trademark of the U.S. Department of Defense. **UNIX is a trademark of Bell Laboratories).

INDEX TERMS

SOFTWARE LIFE CYCLE
SOFTWARE TOOL SYSTEMS
PROCESS DESIGN LANGUAGE (PDL)
COMPILERS
UNIX
COMPUTER COMMUNICATIONS NETWORKS

DOCUMENT NUMBER: 4530 TYPE: JOURNAL ARTICLE

PROBLEMS WITH ADA AS A PROGRAM DESIGN LANGUAGE: A POSITION PAPER

ALSTAD, JAMES P.
ACM ADA LETTERS, VOL 2, ISSUE 6, PP. 51-52, 05/83

This article expresses the opinion of the author towards the use of Ada* as a program design language (PDL). Three problems are identified which may arise when using Ada as a PDL and the author traces these problems to the fact that Ada is a programming language, not a design language. The author raises some fundamental questions about the nature of PDLs. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

PROGRAM DESIGN LANGUAGE (PDL)

DOCUMENT NUMBER: 4531 TYPE: JOURNAL ARTICLE

MODULAR DECOMPOSITION OF ADA INTO A HIERARCHY OF SUBLANGUAGES

BOSSI, A.; COCCO, N.; DULLI, S.
ACM ADA LETTERS, VOL 2, ISSUE 6, PP. 53-58, 05/83

This article provides a teaching methodology for coping with the Ada* programming language. The proposed methodology is based on the definition of a set of hierarchically developed language modules. Based on this, different separate language modules are built, each introducing a further concept of the language. The strategy for providing such a methodology is presented. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

MODULARIZATION
STEPWISE REFINEMENT
MODULAR DECOMPOSITION
EDUCATION

DOCUMENT NUMBER: 4532 TYPE: JOURNAL ARTICLE

ADA EXPERIENCE ON THE ADA CAPABILITY STUDY

DOBBS, PAUL
ACM ADA LETTERS, VOL 2, ISSUE 6, PP. 59-62, 05/83

This article is a report on experience in the use of Ada* during the coding phase of large-scale real-time applications. The author observes the usage of various data types and lists the precentages of certain kinds of errors. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

DATA TYPES DEADLOCKS ERRORS
REAL-TIME SYSTEMS

DOCUMENT NUMBER: 4533 TYPE: JOURNAL ARTICLE

ADA LANGUAGE STATISTICS FOR THE IMAX 432 OPERATING SYSTEM

ZEIGLER, STEPHEN F.; WEICKER, REINHOLD P.
ACM ADA LETTERS, VOL 2, ISSUE 6, PP. 63-67, 05/83

This article reviews a project to measure language-related statistical data from the IMAX 432 operating system on Intel's IAPX 432 microprocessor. The data collected was related to the use of Ada* on the project. Brief analysis efforts are reviewed. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

COMPILERS MICROPROCESSORS OPERATING SYSTEMS
DATA COLLECTION DATA ANALYSIS

DOCUMENT NUMBER: 4534 TYPE: JOURNAL ARTICLE

ADA PUBLICATIONS

RAMANOWSKY
ACM ADA LETTERS, VOL 2, ISSUE 6, PP. 87-109, 05/83

This article is a bibliography of reports, books, and articles on the Ada* programming language. There are 21 categories which the entries have been classified into. Among the categories are software engineering, design languages, compiler validation, education, and intermediate languages. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

PROGRAM DESIGN LANGUAGE (PDL) COMPILERS
EDUCATION SOFTWARE TOOL SYSTEMS INTERMEDIATE LANGUAGES
STANDARDIZATION

DOCUMENT NUMBER: 4535 DOCUMENT DATE: 11/01/80 TYPE: TECHNICAL REPORT

ADA COMPILER VALIDATION PLANS AND PROCEDURES (PRELIMINARY)

STAFF AUTHOR, SOFTECH,INC. TOTTEN POND RD,WALTHAM,MA 02154

This document is a generalized plan for Ada* compiler validations. The document describes the information to be provided in a test plan and the procedures to be followed for a specific Ada compiler validation. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

COMPILERS

AVAILABLE FROM: SOFTECH, INC., 460 TOTTEN POND RD, WALTHAM, MA 02154
REPORT NUMBER: 1067-6

SPONSORS: DEFENSE ADVANCED RESEARCH PROJECTS AGENCY,ARLINGTON,VA

DOCUMENT NUMBER: 4536 DOCUMENT DATE: 08/05/81 TYPE: SPECIFICATION

ADA LANGUAGE SYSTEM ROLM 1666 RUNTIME SUPPORT LIBRARY B5 SPECIFICATION

STAFF AUTHOR, SOFTECH,INC. TOTTEN POND RD,WALTHAM,MA 02154

This specification establishes the requirements for performance, design, test, and qualification of a computer program identified as the Ada* Language System (ALS) Rolm** 1666 Runtime Support Library (RSL). The RSL shall be a set of packages that support the implementation of the semantics of Ada on the given hardware. The requirements for the various interfaces and functions of the RSL are given. Quality assurance provisions are also provided. (*Ada is a trademark of the U.S. Department of Defense; **Rolm is a trademark of the Rolm Corporation).

INDEX TERMS

SOFTWARE TOOL SYSTEMS REQUIREMENTS QUALITY ASSURANCE

AVAILABLE FROM: SOFTECH, INC., 460 TOTTEN POND RD, WALTHAM, MA 02154
REPORT NUMBER: CR-CP-0059-B24

SPONSORS: U.S.ARMY,COMMUNICATIONS R & D COMND, FT.MONMOUTH, NJ

DOCUMENT NUMBER: 4537 TYPE: JOURNAL ARTICLE

EUROPEANS SET THE PACE FOR SEVERAL ADA DEVELOPMENTS

JONES, KEITH
MINI-MICRO SYSTEMS, VOL 16, ISSUE 6, PP. 81-88, 06/83

This article reviews various European development efforts for Ada* and the Ada Programming Support Environment (APSE). Work involved with a formal definition of the Ada language is examined. Portability efforts for Ada are also discussed. An overview of several additional studies is also provided. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS PORTABILITY

DOCUMENT NUMBER: 4538 TYPE: TECHNICAL REPORT

FORMAL DEFINITION OF ADA · THE STORAGEMODEL

LOVENGREEN, HANS H.

This report contains a formal model of the Ada* storage concept. The definition is worked out in "the Vienna Development Method" and the meta-language used is the so-called META-4. After a brief overview, the formulas for the formal definition are given. Then, the annotations for those formulas are provided. A definition of the domains, which models the abstract Ada storage, is provided in the formulas and a number of functions, which operate on the storage, are examined. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

DOMAINS MEMORY MANAGEMENT

AVAILABLE FROM: THE AUTHOR

DOCUMENT NUMBER: 4539 TYPE: PAPER

THE ADA ATOM SYSTEM ENVIRONMENT

LEVY, ARNOLD J.
UNPUBLISHED PAPER OR REPORT, 14 P.

This paper presents the Ada* atom system. This system allows a team of programmers to work in conjunction with each other in implementing systems written in Ada. The system is presented in a top down fashion. The propc ed keyboard to be used with the system is also presented. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS

AVAILABLE FROM: THE AUTHOR

DOCUMENT NUMBER: 4540 TYPE: JOURNAL ARTICLE

RESOLVING OVERLOADED EXPRESSIONS IN ADA

RUNCIMAN, C.
ADA IMPLEMENTOR'S NEWSLETTER, 9 P., 02/81

This article summarizes and reviews the overload resolution requirements for the Ada* programming language. The solutions offered in several published papers are examined and reformulated so as to allow a comparative analysis of their techniques to be made. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

LANGUAGE STRUCTURE

DOCUMENT NUMBER: 4541 TYPE: TECHNICAL REPORT

THE ADA COMPILER DEVELOPMENT PROJECT - OVERVIEW

DAUSMANN, MANFRED; DROSSOPOULOU, SOPHIA; GOOS, GERHARD; PERSCH, GUIDO; WINTERSTEIN, GEORG

This report presents a short overview of the development of an Ada* compiler at the University of Karlsruhe. The authors present the structure of the compiler being implemented, the methods applied, the tools utilized, and the time schedule. The authors also indicate the state and performance of the compiler as of the date of the report. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

COMPILERS INTERMEDIATE LANGUAGES LIS

AVAILABLE FROM: THE AUTHOR

SPONS 3: BUNDESAMT FUR WEHRTECHNIK UND BESCHAFFUNG,KOBLENZ,GER.

DOCUMENT NUMBER: 4542 DOCUMENT DATE: 05/81 TYPE: TECHNICAL REPORT

PDL/ADA - PDL EQUIVALENCES: A SIDE-BY-SIDE COMPARISON OF PDL/ADA AND PDL

WAUGH, D.W.

This document presents the PDL/Ada* equivalents for the various Program Design Language (PDL) constructs. The presentation is in the form of a side-by-side comparison of features in the two languages. Notes regarding typical usage have been limited to those particular features where a misunderstanding might occur from only a side-by-side comparison. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

PROGRAM DESIGN LANGUAGE (PDL) LANGUAGE EVALUATION
LANGUAGE STRUCTURE

AVAILABLE FROM: THE AUTHOR

DOCUMENT NUMBER: 4543 DOCUMENT DATE: 01/18/82 TYPE: SPECIFICATION

LINKER FACILITY DESIGN SPECIFICATION FOR THE INTERMETRICS ADA/TOPS-20 PROTOTYPE COMPILER

STAFF AUTHOR, INTERMETRICS,INC.,CAMBRIDGE,MA 02138

This specification presents a design for the linking facilities for the Intermetrics Ada*/TOPS-20 Prototype Compiler (IAPC-20). Problems of separate compilation, of the run-time system, and of the use of TOPS-20 extended addressing are discussed. The algorithm for order of elaboration and access before elaboration (OOE/ABE) analysis, as required by July 1980 Ada, is discussed. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

COMPILERS LINKAGE EDITORS

AVAILABLE FROM: INTERMETRICS, INC. 733 CONCORD AV CAMBRIDGE, MA 02138
ORDER NUMBER: 4002
REPORT NUMBER: IR-MA-077

SPONSORS: INTERMETRICS,INC.,CAMBRIDGE,MA 02138

DOCUMENT NUMBER: 4544 DOCUMENT DATE: 13/24/81 TYPE: SPECIFICATION

DEBUGGER DESIGN SPECIFICATION FOR THE INTERMETRICS ADA/TOPS-20 PROTOTYPE COMPILER

STAFF AUTHOR, INTERMETRICS,INC.,CAMBRIDGE,MA 02138

This specification presents the design of the debugger for the Intermetrics Ada*/TOPS-20 Prototype Compiler (IAPC-20). The debugger allows single-stepping and setting breakpoints at statements, declarations, and subprogram entry and exit. It allows display and change of user-declared objects. Ada-specific problems are described and addressed. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

COMPILERS DEBUGGING AUTOMATED TESTING

AVAILABLE FROM: INTERMETRICS, INC. 733 CONCORD AV CAMBRIDGE, MA 02138
ORDER NUMBER: 4002
REPORT NUMBER: IR-MA-028

SPONSORS: INTERMETRICS,INC.,CAMBRIDGE,MA 02138

DOCUMENT NUMBER: 4545 DOCUMENT DATE: 05/81 TYPE: SPECIFICATION

ADA LANGUAGE SYSTEM COMPILER MACHINE-INDEPENDENT SECTION B5 SPECIFICATION

STAFF AUTHOR, SOFTECH,INC. TOTTEN POND RD,WALTHAM,MA 02154

This specification establishes the requirements for performance, design, test, and qualification of a computer program identified as the Ada* Language System (ALS) Compiler Machine-independent section. The requirements of the various interfaces and functions of the machine-independent portion of the Ada compiler are examined. Quality assurance provisions are also discussed. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS COMPILERS REQUIREMENTS
QUALITY ASSURANCE

AVAILABLE FROM: SOFTECH, INC., 460 TOTTEN POND RD, WALTHAM, MA 02154
REPORT NUMBER: CR-CP-0059-B84

SPONSORS: U.S.ARMY COMM-ELECTRONICS CMD(CECOM), FT. MONMOUTH, NJ

DOCUMENT NUMBER: 4546 DOCUMENT DATE: 06/81 TYPE: SPECIFICATION

ADA LANGUAGE SYSTEM ROLM LINKER B5 SPECIFICATION

STAFF AUTHOR, SOFTECH,INC. TOTTEN POND RD,WALTHAM,MA 02154

This specification establishes the requirements for performance, design, test, and qualification of a computer program identified as the Ada* Language System (ALS) Rolm** Linker. The requirements for the various interfaces and functions of the linker are examined. Quality assurance provisions are also discussed. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS LINKAGE EDITORS REQUIREMENTS
QUALITY ASSURANCE

AVAILABLE FROM: SOFTECH, INC., 460 TOTTEN POND RD, WALTHAM, MA 02154
REPORT NUMBER: CR-CP-0059-B42

SPONSORS: U.S.ARMY COMM-ELECTRONICS CMD(CECOM), FT. MONMOUTH, NJ

DOCUMENT NUMBER: 4547 DOCUMENT DATE: 05/81 TYPE: SPECIFICATION

ADA LANGUAGE SYSTEM BARE VAX-11/780 LOADER B5 SPECIFICATION

STAFF AUTHOR, SOFTECH,INC. TOTTEN POND RD,WALTHAM,MA 02154

This specification establishes the requirements for performance, design, test, and qualification of a computer program identified as the Ada* Language System (ALS) Bare Vax-11/780 Loader. The loader is used to load a user program and runtime nucleus into the Bare Vax-11/780 target environment and to initiate the execution of the user program. The requirements of the various interfaces and functions of the loader are examined. Quality assurance provisions are also discussed. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS LOADERS REQUIREMENTS
QUALITY ASSURANCE

AVAILABLE FROM: SOFTECH, INC., 460 TOTTEN POND RD, WALTHAM, MA 02154
REPORT NUMBER: CR-CP-0059-B50

SPONSORS: U.S.ARMY COMM-ELECTRONICS CMD(CECOM), FT. MONMOUTH, NJ

DOCUMENT NUMBER: 4548 DOCUMENT DATE: 08/02/79 TYPE: TECHNICAL REPORT

CURRENT PROPOSALS OF THE LANGUAGE ENVIRONMENT SUBGROUP

GILBERT, R. (EDITOR)

This document briefly reviews the requirements for an Ada* language environment. The document also raises some questions about possible problems for both the language and its environment. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS

AVAILABLE FROM: THE AUTHOR

DOCUMENT NUMBER: 4549 DOCUMENT DATE: 08/81 TYPE: SPECIFICATION

ADA LANGUAGE SYSTEM ROLM 1666 LOADER B5 SPECIFICATION

STAFF AUTHOR, SOFTECH,INC. TOTTEN POND RD,WALTHAM,MA 02154

This specification establishes the requirements for performance, design, test, and qualification of a computer program identified as the Ada* Language System (ALS) Rolm** 1666 Loader. The loader is used to load a user program and runtime nucleus into the Rolm 1666 target environment and to initiate the execution of the runtime nucleus initialization routine. The requirements of the various interfaces and functions of the loader are examined. Quality assurance provisions are also discussed. (*Ada is a trademark of the U.S. Department of Defense; **Rolm is a trademark of the Rolm Corporation).

INDEX TERMS

SOFTWARE TOOL SYSTEMS LOADERS REQUIREMENTS
QUALITY ASSURANCE

AVAILABLE FROM: SOFTECH, INC., 460 TOTTEN POND RD, WALTHAM, MA 02154
REPORT NUMBER: CR-CP-0059-B52

SPONSORS: U.S.ARMY COMM-ELECTRONICS CMD(CECOM), FT. MONMOUTH, NJ

DOCUMENT NUMBER: 4550 DOCUMENT DATE: 08/81 TYPE: SPECIFICATION

ADA LANGUAGE SYSTEM ROLM 1602B LOADER B5 SPECIFICATION

STAFF AUTHOR, SOFTECH,INC. TOTTEN POND RD,WALTHAM,MA 02154

This specification establishes the requirements for performance, design, test, and qualification of a computer program identified as the Ada* Language System (ALS) Rolm** 1602B Loader. The loader is used to load a user program and runtime nucleus into the Rolm 1602B target environment and to initiate the execution of the runtime nucleus initialization routine. The requirements for the various interfaces and functions of the loader are examined. Quality assurance provisions are also discussed. (*Ada is a trademark of the U.S. Department of Defense; **Rolm is a trademark of the Rolm Corporation).

INDEX TERMS

SOFTWARE TOOL SYSTEMS LOADERS REQUIREMENTS
QUALITY ASSURANCE

AVAILABLE FROM: SOFTECH, INC., 460 TOTTEN POND RD, WALTHAM, MA 02154
REPORT NUMBER: CR-CP-0059-B51

SPONSORS: U.S.ARMY COMM-ELECTRONICS CMD(CECOM), FT. MONMOUTH, NJ

DOCUMENT NUMBER: 4551 DOCUMENT DATE: 01/82 TYPE: SPECIFICATION

ADA LANGUAGE SYSTEM FILE ADMINISTRATOR B5 SPECIFICATION

STAFF AUTHOR, SOFTECH,INC. TOTTEN POND RD,WALTHAM,MA 02154

This specification establishes the requirements for performance, design, test, and qualification of a computer program identified as the Ada* Language System (ALS) File Administrator. The File Administrator is a collection of tools providing services for comparing elements of the environment database, for balancing disk and tape space requirements of the ALS database, for restoring the ALS database after mechanical failure or human error, for long-term storage of ALS database information, and for ALS-to-ALS database transmission. The requirements for various interfaces and functions of the File Administrator are examined. Quality assurance provisions are also discussed. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS FILE MANAGEMENT SYSTEMS REQUIREMENTS
QUALITY ASSURANCE

AVAILABLE FROM: SOFTECH, INC., 460 TOTTEN POND RD, WALTHAM, MA 02154
REPORT NUMBER: CP-CP-0059-B85

SPONSORS: U.S.ARMY COMM-ELECTRONICS CMD(CECOM), FT. MONMOUTH, NJ

DOCUMENT NUMBER: 4552 DOCUMENT DATE: 08/81 TYPE: SPECIFICATION

ADA LANGUAGE SYSTEM VAX-11/780 CODE GENERATOR B5 SPECIFICATION

STAFF AUTHOR, SOFTECH,INC. TOTTEN POND RD,WALTHAM,MA 02154

This specification establishes the requirements for performance, design, test, and qualification of a computer program identified as the Ada* Language System (ALS) Vax-11/780 Code Generator. The requirements for various interfaces and functions of the code generator are examined. Quality assurance provisions are also discussed. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS REQUIREMENTS QUALITY ASSURANCE

AVAILABLE FROM: SOFTECH, INC., 460 TOTTEN POND RD, WALTHAM, MA 02154
REPORT NUMBER: CR-CP-0059-B10

SPONSORS: U.S.ARMY COMM-ELECTRONICS CMD(CECOM), FT. MONMOUTH, NJ

DOCUMENT NUMBER: 4553 DOCUMENT DATE: 01/82 TYPE: SPECIFICATION

ADA LANGUAGE SYSTEM MCF LINKER B5 SPECIFICATION

STAFF AUTHOR, SOFTECH,INC. TOTTEN POND RD,WALTHAM,MA 02154

This specification establishes the requirements for performance, design, test, and qualification of a computer program identified as the Ada* Language System (ALS) Military Computer Family (MCF) linker. The requirements for various interfaces and functions of the linker are examined. Quality assurance provisions are also discussed. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS MILITARY COMPUTER FAMILY REQUIREMENTS
QUALITY ASSURANCE LINKAGE EDITORS

AVAILABLE FROM: SOFTECH, INC., 460 TOTTEN POND RD, WALTHAM, MA 02154
REPORT NUMBER: CR-CP-0059-B43

SPONSORS: U.S.ARMY COMM-ELECTRONICS CMD(CECOM), FT. MONMOUTH, NJ

DOCUMENT NUMBER: 4568 DOCUMENT DATE: 03/15/83 TYPE: TECHNICAL REPORT

SOFTWARE TECHNOLOGY FOR ADAPTABLE RELIABLE SYSTEMS (STARS) PROGRAM STRATEGY

STAFF AUTHOR, IIT RESEARCH INSTITUTE,199 LIBERTY PLAZA,ROME,NY 13440

This document proposes a strategy for the Software Technology for Adaptable, Reliable Systems (STARS) program to improve the ability to exploit the advantages of computer technology. The document describes the management strategy behind the STARS program. It establishes overall objectives, provides an approach for achieving the objectives, and identifies the management structure necessary to develop a program plan. Several sections of the document also discuss the impact that Ada will have on the STARS initiative. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE MODELS QUALITY METRICS
COST FACTORS COST-BENEFIT ANALYSIS COMPLEXITY MEASUREMENT
MODELLING AND SIMULATION TOOLS DATA COLLECTION
DATA ANALYSIS SCHEDULE ESTIMATION PROGRAMMER TRAINING
SOFTWARE ENGINEERING PROJECT MANAGEMENT

MANAGEMENT TOOLS AND TECHNIQUES		AUDITS
CONFIGURATION MANAGEMENT	DESIGN REVIEWS	INTERFACE CONTROL
COMPUTER LOADING ANALYSIS		EDUCATION
FUNCTIONAL PROGRAMMING	FIRMWARE	SYSTEM DESIGN
DESIGN METHODOLOGIES	DESIGN TOOLS AND TECHNIQUES	
OPERATING SYSTEMS	DATABASE MANAGEMENT SYSTEMS	
RELIABILITY	CORRECTNESS PROOFS	PROGRAM TESTING
PROGRAM ANALYSIS	SOFTWARE TOOL SYSTEMS	ACQUISITION MANAGEMENT
HUMAN ENGINEERING	EMBEDDED COMPUTER SYSTEMS	
COMMUNICATIVENESS		

AVAILABLE FROM: DATA & ANALYSIS CENTER FOR SOFTWARE (DACS)

DOCUMENT NUMBER: 4574 DOCUMENT DATE: 01/15/82 TYPE: SPECIFICATION

ADA LANGUAGE SYSTEM MCF CODE GENERATOR B5 SPECIFICATION

STAFF AUTHOR, SOFTECH,INC. TOTTEN POND RD,WALTHAM,MA 02154

This specification establishes the requirements for performance, design, test, and qualification of a computer program identified as the Ada* Language System (ALS) Military Computer Family (MCF) Code Generator. The first section establishes those requirements which will be verified by each level of testing. The quality assurance provisions are also reviewed. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS	REQUIREMENTS	INTERMEDIATE LANGUAGES
QUALITY ASSURANCE	MILITARY COMPUTER FAMILY	

AVAILABLE FROM: SOFTECH, INC., 460 TOTTEN POND RD, WALTHAM, MA 02154
REPORT NUMBER: CR-CP-0059-B14

SPONSORS: U.S.ARMY COMM-ELECTRONICS CMD(CECOM), FT. MONMOUTH, NJ

DOCUMENT NUMBER: 4578 DOCUMENT DATE: 10/80 TYPE: TECHNICAL REPORT

THE CHARRETTE ADA COMPILER

LAMB, DAVID A.; HISGEN, ANDY; ROSENBERG, JONATHAN; SHERMAN, MARK; BORKAN, MARTHA

This report describes the implementation of a compiler for preliminary Ada*. Two separate but related efforts are described: (1) the Front End of the compiler as completed at Intermetrics, Inc. and (2) the Back End as completed at Carnegie-Mellon University. The goals of the two projects are introduced, the structure of the compiler is reviewed, and the intermediate languages used in the compiler are examined. Then, the run-time representation of types and variables is described. Next, the Front End is discussed and the phases of the compiler that transform the output of the Front End (TCOL-Ada) into a lower-leve intermediate language (MIL) are described. Finally, the translation of MIL into assembly language is discussed and a number of the charrette working notes are provided. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

COMPILERS	INTERMEDIATE LANGUAGES

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
REPORT NUMBER: CMU-CS-80-148

SPONSORS: U.S.A.F. AVIONICS LAB,W-PAFB,OH 45433;
DEFENSE ADVANCED RESEARCH PROJECTS AGENCY,ARLINGTON,VA

DOCUMENT NUMBER: 4579 DOCUMENT DATE: 08/81 TYPE: SPECIFICATION

ADA LANGUAGE SYSTEM KAPSE B5 SPECIFICATION

STAFF AUTHOR, SOFTECH,INC. TOTTEN POND RD,WALTHAM,MA 02154

This specification establishes the requirements for performance, design, test, and qualification of a computer pregram identified as the Ada* Language System (ALS) Kernel Ada Programming Support Environment (KAPSE). Many of the requirements for the interfaces and functions of the KAPSE are described. Quality assurance provisions are also discussed. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS REQUIREMENTS FILE MANAGEMENT SYSTEMS
QUALITY ASSURANCE KERNEL

AVAILABLE FROM: SOFTECH, INC., 460 TOTTEN POND RD, WALTHAM, MA 02154
REPORT NUMBER: CR-CP-0059-B83

SPONSORS: U.S.ARMY COMM-ELECTRONICS CMD(CECOM), FT. MONMOUTH, NJ

DOCUMENT NUMBER: 4580 DOCUMENT DATE: 02/15/82 TYPE: SPECIFICATION

ADA LANGUAGE SYSTEM DATABASE MANAGER B5 SPECIFICATION

STAFF AUTHOR, SOFTECH,INC. TOTTEN POND RD,WALTHAM,MA 02154

This specification establishes the requirements for performance, design, test, and qualification of a computer program identified as the Ada* Language System (ALS) Database Manager. The 3 distinct kinds of services for the Database Manager are decribed, including the file status control functions, the handling of inputs and outputs, and the organization of program libraries. Quality assurance provisions are also discussed. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS FILE MANAGEMENT SYSTEMS QUALITY ASSURANCE
REQUIREMENTS PROGRAM LIBRARY SYSTEMS

AVAILABLE FROM: SOFTECH, INC., 460 TOTTEN POND RD, WALTHAM, MA 02154
REPORT NUMBER: CR-CP-0059-B81

SPONSORS: U.S.ARMY COMM-ELECTRONICS CMD(CECOM), FT. MONMOUTH, NJ

DOCUMENT NUMBER: 4581 DOCUMENT DATE: 09/05/80 TYPE: TECHNICAL REPORT

TCOL REPRESENTATION AND MANIPULATION IN THE INTERMETRICS ADA COMPILER

SPECTOR, DAVID

This report presents a conceptual overview of the Tree Common Language (TCOL) concept and a detailed discussion of the internal representation and manipulation of TCOL in the Intermetrics Ada* compiler. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

INTERMEDIATE LANGUAGES SIMULA VIRTUAL MACHINES
COMPILERS

AVAILABLE FROM: THE AUTHOR
REPORT NUMBER: IR-545

SPONSORS: DEFENSE ADVANCED RESEARCH PROJECTS AGENCY,ARLINGTON,VA

DOCUMENT NUMBER: 4582 DOCUMENT DATE: 02/20/81 TYPE: TECHNICAL REPORT

NEBULA AS A TARGET FOR ADA

STAFF AUTHOR, INTERMETRICS,INC.,CAMBRIDGE,MA 02138

This report examines in detail the qualifications of the Nebula architecture as a target for the Ada* programming language. The authors pay considerable attention to the compiler writer's problem of generating Ada code for the Nebula architecture, both in terms of ease of code generation and efficiency of the resultant object code. First, the authors deal with the support provided by Nebula for the basic Ada data types. Next, the authors address the issues raised by implementation of Ada subprogram calls and parameter passage for the Nebula architecture. Then, the authors evaluate the properties of Nebula which support the Ada exception handling facility, both within single procedures and between procedures and tasks. The authors then deal with the requirements imposed on the Nebula architecture by the Ada multi-tasking facility and examine a number of issues relating to the generation of Ada code. Finally, the document concludes with a summary of the most important recommendations explored in detail in the first chapters. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

NEBULA DATA TYPES EXCEPTION HANDLING

AVAILABLE FROM: THE AUTHOR
REPORT NUMBER: IR#655

SPONSORS: U.S.ARMY, CENTACS,ECOM,FT.MONMOUTH,NJ 07703

DOCUMENT NUMBER: 4584 DOCUMENT DATE: 02/14/82 TYPE: SPECIFICATION

ADA LANGUAGE SYSTEM PDP-11/70 ASSEMBLER B5 SPECIFICATION

STAFF AUTHOR, SOFTECH,INC. TOTTEN POND RD,WALTHAM,MA 02154

This specification establishes the requirements for performance, design, test, and qualification of a computer program identified as the Ada* Language System (ALS) PDP-11/70 Assembler. The functions and interfaces of the assembler are examined. The quality assurance provisions are also reviewed. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

ASSEMBLERS QUALITY ASSURANCE REQUIREMENTS
SOFTWARE TOOL SYSTEMS

AVAILABLE FROM: SOFTECH, INC., 460 TOTTEN POND RD, WALTHAM, MA 02164
REPORT NUMBER: CR-CP-0059-B31

SPONSORS: U.S.ARMY COMM-ELECTRONICS CMD(CECOM), FT. MONMOUTH, NJ

DOCUMENT NUMBER: 4585 TYPE: SPECIFICATION

ADA LANGUAGE SYSTEM PDP-11/70 UNIX CODE GENERATOR B5 SPECIFICATION

STAFF AUTHOR, SOFTECH,INC. TOTTEN POND RD,WALTHAM,MA 02154

This specification establishes the requirements for performance, design, test, and qualification of a computer program identified as the Ada* Language System (ALS) PDP-11/70 UNIX** Code Generator. Many of the functions of the code generator are examined and quality assurance provisions are outlined. (*Ada is a trademark of the U.S. Department of Defense; **UNIX is a trademark of Bell Laboratories).

INDEX TERMS

UNIX REQUIREMENTS QUALITY ASSURANCE
SOFTWARE TOOL SYSTEMS

AVAILABLE FROM: SOFTECH, INC., 460 TOTTEN POND RD, WALTHAM, MA 02154
REPORT NUMBER: CR-CP-0059-B11

SPONSORS: U.S.ARMY COMM-ELECTRONICS CMD(CECOM), FT. MONMOUTH, NJ

DOCUMENT NUMBER: 4586 TYPE: PAPER

OVERVIEW OF AN ADA COMPATIBLE DISTRIBUTED DATABASE MANAGER

CHAN, ARVOLA; DAYAL, UMESHWAR; FOX, STEPHEN; GOODMAN, NATHAN; RIES, DANIEL; SKEEN, DALE
UNPUBLISHED PAPER OR REPORT, 20 P.

This paper gives an overview of the Distributed Database Manager (DDM) and its mechanism for handling distributed and replicated data. The database management facilities provided by the system are first summarized. Next, the facilities for distributed database administration are outlined. The decompilation approach employed for supporting the ADAPLEX language (based on Ada*) is sketched and strategies for optimizing DAPLEX transactions are highlighted. Mechanisms for synchronizing concurrent transactions are summarized and innovations in the area of recovery management are identified. Finally, the implementation status of the system is reported. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

DATABASE MANAGEMENT SYSTEMS

AVAILABLE FROM: THE AUTHOR

SPONSORS: U.S.NAVY,NAVAL ELECTRONICS SYSTEMS COMMAND,WASH.,DC;
DEFENSE ADVANCED RESEARCH PROJECTS AGENCY,ARLINGTON,VA

DOCUMENT NUMBER: 4587 DOCUMENT DATE: 08/13/75 TYPE: TECHNICAL REPORT

"WOODENMAN" SET OF CRITERIA AND NEEDED CHARACTERISTICS FOR A COMMON DOD HIGH ORDER PROGRAMMING LANGUAGE

FISHER, DAVID A.

This report reviews the Ada* common high order language (HOL) effort during the early phases of the language design effort. The report discusses the quality factors of software in light of the development of Ada. The design goals and needed characteristics of Ada are also examined. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

LANGUAGE DESIGN	EFFICIENCY	FLEXIBILITY
MAINTAINABILITY	PORTABILITY	

AVAILABLE FROM: THE AUTHOR

DOCUMENT NUMBER: 4588 DOCUMENT DATE: 08/28/81 TYPE: SPECIFICATION

ADA LANGUAGE SYSTEM ROLM 1602B CODE GENERATOR B5 SPECIFICATION

STAFF AUTHOR, SOFTECH,INC. TOTTEN POND RD,WALTHAM,MA 02154

This specification establishes the requirements for performance, design, test, and qualification of a computer program identified as the Ada* Language System (ALS) Rolm** 1602B Code Generator. The code generator produces a machine code implementation of a user Ada source program for execution in the Rolm 1602B computer. The requirements for various interfaces and functions of the code generator are examined. Quality assurance provisions are also discussed. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS	REQUIREMENTS	QUALITY ASSURANCE

AVAILABLE FROM: SOFTECH, INC., 460 TOTTEN POND RD, WALTHAM, MA 02154
REPORT NUMBER: CR-CP-0059-B12

SPONSORS: U.S.ARMY COMM-ELECTRONICS CMD(CECOM), FT. MONMOUTH, NJ

DOCUMENT NUMBER: 4589 TYPE: SPECIFICATION

ADA LANGUAGE SYSTEM COMMAND LANGUAGE PROCESSOR B5 SPECIFICATION

STAFF AUTHOR, SOFTECH,INC. TOTTEN POND RD,WALTHAM,MA 02154

This specification establishes the requirements for performance, design, test, and qualification of a computer program identified as the Ada* Language System (ALS) Command Laguage Processor (CLP). The CLP will interpret the command language input to the ALS to invoke all the tools except host resident tools and to provide user option and control inputs. The requirements for interfaces and functions of the CLP are examined. Quality assurance provisions are also discussed. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

COMMAND LANGUAGES	SOFTWARE TOOL SYSTEMS	REQUIREMENTS
QUALITY ASSURANCE		

AVAILABLE FROM: SOFTECH, INC., 460 TOTTEN POND RD, WALTHAM, MA 02154
REPORT NUMBER: CR-CP-0059-B80

SPONSORS: U.S.ARMY COMM-ELECTRONICS CMD(CECOM), FT. MONMOUTH, NJ

DOCUMENT NUMBER: 4590 DOCUMENT DATE: 01/15/82 TYPE: SPECIFICATION

ADA LANGUAGE SYSTEM MCF ASSEMBLER B5 SPECIFICATION

STAFF AUTHOR, SOFTECH,INC. TOTTEN POND RD,WALTHAM,MA 02154

This specification establishes the requirements for performance, design, test, and qualification of a computer program identified as the Ada* Language System (AL) Military Computer Family (MCF) Assembler. The assembler is included in the ALS to allow users to write native machine level subprograms that can be called from Ada compilatin units. Quality assurance provisions are also discussed. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS	ASSEMBLERS	QUALITY ASSURANCE
REQUIREMENTS	MILITARY COMPUTER FAMILY	

AVAILABLE FROM: SOFTECH, INC., 460 TOTTEN POND RD, WALTHAM, MA 02154
REPORT NUMBER: CR-CP-0059-B34

SPONSORS: U.S.ARMY COMM-ELECTRONICS CMD(CECOM), FT. MONMOUTH, NJ

DOCUMENT NUMBER: 4602 DOCUMENT DATE: 08/28/83 TYPE: SPECIFICATION

ADA LANGUAGE SYSTEM ROLM 1666 CODE GENERATOR B5 SPECIFICATION

STAFF AUTHOR, SOFTECH,INC. TOTTEN POND RD,WALTHAM,MA 02154

This specification establishes the requriements for performance, design, test, and qualification of a computer program identified as the Ada* Language System (ALS) Rolm** 1666 Code Generator. The code generator produces a machine code implementation of a user Ada source program for execution in the Rolm 1666 computer. The requirements for the interfaces and functions of the code generator are examined. Quality assurance provisions are also discussed. (*Ada is a trademark of the U.S. Department of Defense; **Rolm is a trademark of the Rolm Corporation).

INDEX TERMS

SOFTWARE TOOL SYSTEMS	REQUIREMENTS	QUALITY ASSURANCE

AVAILABLE FROM: SOFTECH, INC., 460 TOTTEN POND RD, WALTHAM, MA 02154
REPORT NUMBER: CR-CP-0059-B13

SPONSORS: U.S.ARMY COMM-ELECTRONICS CMD(CECOM), FT. MONMOUTH, NJ

DOCUMENT NUMBER: 4603 DOCUMENT DATE: 06/82 TYPE: TECHNICAL REPORT

JOVIAL (J73) TO ADA TRANSLATOR

NEIMAN, MARK

This document contains the functional description and system/subsystem specifications for a JOVIAL J73/Ada* translator, and guidelines for J73 programmers who anticipate their programs will be converted to Ada at a later date. The functional description specifies the maximum JOVIAL J73 subset that can be converted to Ada. Techniques for the optimum automatic translation of the source code are specified. The J73 constructs that cannot be automatically translated are identified. The system/subsystem specification provides a more detailed breakdown of the proposed translator. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

JOVIAL TRANSLATORS COMPILERS
CONVERSIONS

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: AD A120472
REPORT NUMBER: RADC-TR-82-175

SPONSORS: ROME AIR DEVELOPMENT CENTER, GAFB, ROME, NY 13441

DOCUMENT NUMBER: 4604 DOCUMENT DATE: 07/10/81 TYPE: SPECIFICATION

ADA LANGUAGE SYSTEM VAX-11/780 VAX/VMS RUNTIME SUPPORT LIBRARY

STAFF AUTHOR, SOFTECH,INC. TOTTEN POND RD,WALTHAM,MA 02154

This specification establishes the requirements for performance, design, test, and qualification of a computer program identified as the Ada* Language System (ALS) Vax-11/780 Vax/VMS Runtime Support Library (RSL). The RSL is a set of packages that support the implementation of the semantics of Ada on the given hardware. The requirements for various interfaces and functions of the RSL are examined. Quality assurance provisions are also discussed. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS REQUIREMENTS QUALITY ASSURANCE

AVAILABLE FROM: SOFTECH, INC., 460 TOTTEN POND RD, WALTHAM, MA 02154
REPORT NUMBER: CR-CP-0059-C-0507

SPONSORS: U.S.ARMY COMM-ELECTRONICS CMD(CECOM), FT. MONMOUTH, NJ

DOCUMENT NUMBER: 4605 DOCUMENT DATE: 07/07/81 TYPE: SPECIFICATION

ADA LANGUAGE SYSTEM ROLM 1666 ASSEMBLER B5 SPECIFICATION

STAFF AUTHOR, SOFTECH,INC. TOTTEN POND RD,WALTHAM,MA 02154

This specification establishes the requirements for performance, design, test, and qualification of a computer program identified as the Ada* Language System (ALS) Rolm** 1666 Assembler. The requirements for the various interfaces and functions of the assembler are examined. Quality assurance provisions are also discussed. (*Ada is a trademark of the U.S. Department of Defense; **Rolm is a trademark of the Rolm Corporation).

INDEX TERMS

SOFTWARE TOOL SYSTEMS ASSEMBLERS REQUIREMENTS

QUALITY ASSURANCE

AVAILABLE FROM: SOFTECH, INC., 460 TOTTEN POND RD, WALTHAM, MA 02154
REPORT NUMBER: CR-CP-005933

SPONSORS: U.S.ARMY COMM-ELECTRONICS CMD(CECOM), FT. MONMOUTH, NJ

DOCUMENT NUMBER: 4606 DOCUMENT DATE: 08/05/81 TYPE: SPECIFICATION

ADA LANGUAGE SYSTEM ROLM 1602B RUNTIME SUPPORT LIBRARY B5 SPECIFICATION

STAFF AUTHOR, SOFTECH,INC. TOTTEN POND RD,WALTHAM,MA 02154

This specification establishes the requirements for performance, design, test, and qualification of a computer program identified as the Ada* Language System (ALS) Rolm** 1602B Runtime Support LIbrary (RSL). The RSL shall be a set of packages that support the implementation of the semantics of Ada on the given hardware. The requirements for the various interfaces and functions of the RSL are discussed. Quality assurance provisions are also discussed. (*Ada is a trademark of the U.S. Department of Defense; **Rolm is a trademark of the Rolm Corporation).

INDEX TERMS

SOFTWARE TOOL SYSTEMS REQUIREMENTS QUALITY ASSURANCE

AVAILABLE FROM: SOFTECH, INC., 460 TOTTEN POND RD, WALTHAM, MA 02154
REPORT NUMBER: CR-CP-0059-B23

SPONSORS: U.S.ARMY COMM-ELECTRONICS CMD(CECOM), FT. MONMOUTH, NJ

DOCUMENT NUMBER: 4607 DOCUMENT DATE: 06/16/81 TYPE: SPECIFICATION

ADA LANGUAGE SYSTEM VAX-11/780 LINKER B5 SPECIFICATION

STAFF AUTHOR, SOFTECH,INC. TOTTEN POND RD,WALTHAM,MA 02154

This specification establishes the requirements for performance, design, test, and qualification of a computer program identified as the Ada* Language System (ALS) Vax-11/780 linker. The requirements for the various interfaces and functions of the linker are examined. Quality assurance provisions are also discussed. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS REQUIREMENTS QUALITY ASSURANCE
LINKAGE EDITORS

AVAILABLE FROM: SOFTECH, INC., 460 TOTTEN POND RD, WALTHAM, MA 02154
REPORT NUMBER: CR-CP-0059-B40

SPONSORS: U.S.ARMY COMM-ELECTRONICS CMD(CECOM), FT. MONMOUTH, NJ

DOCUMENT NUMBER: 4608 DOCUMENT DATE: 07/20/81 TYPE: SPECIFICATION

ADA LANGUAGE SYSTEM BARE VAX-11/780 RUNTIME SUPPORT LIBRARY B5 SPECIFICATION

STAFF AUTHOR, SOFTECH,INC. TOTTEN POND RD,WALTHAM,MA 02154

This specification establishes the requirements for performance, design, test, and qualification of a computer program identified as the Ada* Language System (ALS) Bare Vax-11/780 Runtime Support Library (RSL). The RSL is a set of packages that support the implementation of the semantics of Ada on the given hardware. The requirements for the various interfaces and functions of the RLS are examined. Quality assurance provisions are also discussed. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS	REQUIREMENTS	QUALITY ASSURANCE

AVAILABLE FROM: SOFTECH, INC., 460 TOTTEN POND RD, WALTHAM, MA 02154
REPORT NUMBER: CR-CP-0059-B21

SPONSORS: U.S.ARMY COMM-ELECTRONICS CMD(CECOM), FT. MONMOUTH, NJ

DOCUMENT NUMBER: 4609 DOCUMENT DATE: 06/16/81 TYPE: SPECIFICATION

ADA LANGUAGE SYSTEM PDP-11/70 UNIX LINKER B5 SPECIFICATION

STAFF AUTHOR, SOFTECH,INC. TOTTEN POND RD,WALTHAM,MA 02154

This specification establishes the requirements for performance, design, test, and qualification of a computer program identified as the Ada* Language System (ALS) PDP-11/70 UNIX** Linker. The requirements for the interfaces and functions of the linker are examined. Quality assurance provisions are also discussed. (*Ada is a trademark of the U.S. Department of Defense; **UNIX is a trademark of Bell Laboratories).

INDEX TERMS

SOFTWARE TOOL SYSTEMS	REQUIREMENTS	QUALITY ASSURANCE
UNIX	LINKAGE EDITORS	

AVAILABLE FROM: SOFTECH, INC., 460 TOTTEN POND RD, WALTHAM, MA 02154
REPORT NUMBER: CR-CP-0059-B41

SPONSORS: U.S.ARMY COMM-ELECTRONICS CMD(CECOM), FT. MONMOUTH, NJ

DOCUMENT NUMBER: 4610 TYPE: BIBLIOGRAPHY

ADA BIBLIOGRAPHY

STAFF AUTHOR, IIT RESEARCH INSTITUTE,199 LIBERTY PLAZA,ROME,NY 13440

This bibliography contains a detailed listing of all documents in the Ada* Bibliographic Database established and maintained by IIT Research Institute for the Ada Joint Program Office; together with an author index and a subject index. The first section contains the citation and abstract for each document arranged in ascending order by document number. The second section, arranged alphabetically by author's name, contains the document number and document title The third section consists of a list of index terms along with the document numbers of cited documents for which each term is applicable. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS	PASCAL	MANAGEMENT
ARCHITECTURE	LANGUAGE DESIGN	SEMANOL

VALIDATION TESTING
PROGRAM DESIGN LANGUAGE (PDL) COMPILERS
PRODUCTIVITY

AVAILABLE FROM: DATA & ANALYSIS CENTER FOR SOFTWARE (DACS)

SPONSORS: DEFENSE SUPPLY SERVICES, WASHINGTON, DC

DOCUMENT NUMBER: 4611 TYPE: JOURNAL ARTICLE

ADA COMPUTER ON FIVE BOARDS SET TO BOW

BISHOP, ANA; JOHNSON, R. COLIN
ELECTRONICS, VOL 54, ISSUE 20, PP. 39-40, 09/13/81

This article reviews the development of Ada* compilers for microprocessors. Specific attention is given to Western Digital's development of an Ada Microengine. Other developments are mentioned for companies such as Intel, Telesoft, and Digicomp Research. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

MICROPROCESSORS

DOCUMENT NUMBER: 4612 DOCUMENT DATE: 01/81 TYPE: TECHNICAL REPORT

REFERENCE MANUAL FOR ADAPLEX

SMITH, JOHN M.; FOX, STEVE; LANDERS, TERRY

This report is a reference manual for the ADAPLEX database sublanguage. The ADAPLEX language is an integrated language for programming database applications and results from the embedding of the database sublanguage DAPLEX in the Ada* programming language. The design considerations of ADAPLEX are first discussed. Then, an overview of ADAPLEX is provided. The manual follows the same sequence of presentation as the Ada Reference Manual. The syntax rules presented in the body of the manual are the new rules which are added to Ada to form ADAPLEX. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

DATABASE MANAGEMENT SYSTEMS LANGUAGE DESIGN
LANGUAGE STRUCTURE EMBEDDED LANGUAGES

AVAILABLE FROM: THE AUTHOR

SPONSORS: DEFENSE ADVANCED RESEARCH PROJECTS AGENCY,ARLINGTON,VA

DOCUMENT NUMBER: 4613 DOCUMENT DATE: 09/82 TYPE: TECHNICAL REPORT

AN EVALUATION OF THE NEEDS AND REQUIREMENTS FOR THE ESTABLISHMENT OF AN ADA LIAISON ORGANIZATION

JORSTAD, NORMAN D.; LEE, JOHN A.N.; LOMONACO, SAMUEL J., JR.

This report examines the needs of the Ada* Joint Program Office (AJPO) in the establishment of an organization [to be called the Ada Liaison Organization (ALO)] for the "sustenance" of the Ada language following the acceptance of the language as a National standard and during the early stages of implementation, expansion of applicability, and development of supporting systems. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

TECHNOLOGY TRANSFER

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD.SPRINGFIELD.VA
ORDER NUMBER: AD-A122286
REPORT NUMBER: P-1681

SPONSORS: DEFENSE ADVANCED RESEARCH PROJECTS AGENCY.ARLINGTON.VA

DOCUMENT NUMBER: 4614 DOCUMENT DATE: 01/12/82 TYPE: TECHNICAL REPORT

ADA WORKBENCH COMPILER PROJECT 1981

BRIGGS, J.S.; FORSYTH, C.H.; JOHNSON, C.W.; MURDIE, J.A.; PYLE, I.C.; RUNCIMAN, C.; WALKER, I.; WAND, I.C.; WILLIAMS, A.J.

This report discusses a project for the development of a "workbench" compiler for the Ada* programming language. An overview of the project is provided. The structure of the compiler is briefly reviewed and a listing of the tools available in the workbench system is given. Future plans for the project are also provided. The document contains several appendices that demonstrate the capabilities of the compiler. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

COMPILERS

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD.SPRINGFIELD.VA
REPORT NUMBER: 48

SPONSORS: SCIENCE RESEARCH COUNCIL

DOCUMENT NUMBER: 4615 DOCUMENT DATE: 10/82 TYPE: TECHNICAL REPORT

ADVANCED TOOLS FOR SOFTWARE MAINTENANCE

DEAN, JEFFREY S.; MCCUNE, BRIAN P.

This report discusses software maintenance and proposes maintenance tools and techniques for the Ada* programming environment. Maintenance practices for several Air Force Command, Control, Communications, and Intelligence (C3I) software projects are reviewed. Three out of the four major problems identified during the project were attributed to the difficulty of comprehending software. Nine tools are proposed to help solve these and other problems, including a tool to help coordinate the programming process, a tool to aid in the collection and use of documentation, and an editor that is knowledgeable about what it is editing. The tools are based on related technologies that are also discussed in the report: artificial intelligence, automatic programming, intelligent use interfaces, formal verification, programming environments, and software metrics. Recommendations are made as to how the tools may be incorporated into the Ada Programming Support Environment (APSE). (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

MAINTENANCE TOOLS AND TECHNIQUES		INTERLISP
ARTIFICIAL INTELLIGENCE	KNOWLEDGE BASED SYSTEMS	AUTOMATED DOCUMENTATION
TESTING	COMMAND, CONTROL, &COMMUNICATION APPLICATION	
MODIFICATION PROCEDURES	PROGRAM MAINTENANCE	EDITORS
VERIFICATION	PRODUCTIVITY	UNIX

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
REPORT NUMBER: TR-3006-1

SPONSORS: ROME AIR DEVELOPMENT CENTER, GAFB, ROME, NY 13441

DOCUMENT NUMBER: 4616 TYPE: PAPER

PARALLELISM IN ADA

LOVENGREEN, HANS HENRIK
LECTURE NOTES IN COMPUTER SCIENCE, VOL 98, PP. 308-432, 10/80

This paper attempts to solve the problem of modeling the Ada* tasking semantics as abstractly as possible. The paper also discusses the problem of embedding its parallel met-process model in an otherwise denotational model of sequential Ada. The paper is divided into four parts: (1) project report, (2) a formal model of the tasking concepts in Ada, (3) technical report on parallelism on Ada, and (4) the formal model. The first part presents the background for this and three other companion projects. The principal compiler development methodology is explained and it is shown how this project fits into the method. It also describes the project course and summarizes the results and conclusions of the project. The second part is an introduction to the developed formal model. The third part describes the foundations of the formal method, discusses various modeling strategies, and considers some implementation strategies. The fourth part constitutes a bare formal definition of the parallelism in Ada. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

COMPILERS	MODELLING AND SIMULATION TOOLS
MONITORS	KERNEL

AVAILABLE FROM: SPRINGER-VERLAG, INC., NEW YORK NY 10010

DOCUMENT NUMBER: 4617 TYPE: PAPER

THE DESIGN OF A VIRTUAL MACHINE FOR ADA

DOMMERGAARD, OLE
LECTURE NOTES IN COMPUTER SCIENCE, VOL 98, PP. 435-605, 10/80

This paper describes the design of a virtual machine for Ada*. First, the author gives a brief discussion of Ada, and A-code. The author tells what A-code is and why A-code is selected for a real machine. The design criteria for the machine is also given. Next, systematic compiler and interpreter construction is discussed. Then, the actual design of the machine is described. Finally, the author comments on the results of the development project. The appendices contain the complete formal model of the virtual machine and a rudimentary compiling algorithm from a subset of Ada into A-code. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

VIRTUAL MACHINES	DATA TYPES	EXCEPTION HANDLING
COMPILERS	INTERPRETERS	

AVAILABLE FROM: SPRINGER-VERLAG, INC., NEW YORK NY 10010

DOCUMENT NUMBER: 4618 TYPE: PAPER

THE DDC ADA COMPILER DEVELOPMENT METHOD

BJORNER, DINES; OEST, NYBYE
LECTURE NOTES IN COMPUTER SCIENCE, VOL 98, PP. 1-20, 10/80

This paper outlines the specific development methods used in a large scale, full Ada* compiler and run-time system development project. The paper introduces the Ada Compiler Environment Support (ACES) and Ada Run Time System (ARTES). The authors also discuss quality assurance in relation to the development of software, examining chief programmer team concepts and the role of a program development librarian. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

COMPILERS
DEVELOPMENT SUPPORT LIBRARIAN
KERNEL
SOFTWARE TOOL SYSTEMS
QUALITY ASSURANCE
CHIEF PROGRAMMER TEAM

AVAILABLE FROM: SPRINGER-VERLAG, INC., NEW YORK NY 10010

DOCUMENT NUMBER: 4619 DOCUMENT DATE: 10/80 TYPE: PAPER

A DENOTATIONAL (STATIC) SEMANTICS METHOD FOR DEFINING ADA CONTEXT CONDITIONS

BUNDGAARD, JORGEN; SCHULTZ, LENNART
LECTURE NOTES IN COMPUTER SCIENCE, VOL 98, PP. 21-212, 10/80

This paper outlines a denotational semantics like method for defining the statically decidable context conditions that Ada* programs must satisfy. The resulting definition illustrates representational and operational abstraction by not referring to any compiler realization. Numerous constructs of the Ada language are reviewed and example programs are provided. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

DATA TYPES
LANGUAGE STRUCTURE

AVAILABLE FROM: SPRINGER-VERLAG, INC., NEW YORK NY 10010

DOCUMENT NUMBER: 4620 TYPE: PAPER

A FORMAL SEMANTICS DEFINITION OF SEQUENTIAL ADA

PENDERSEN, JAN STORBANK
LECTURE NOTES IN COMPUTER SCIENCE, VOL 98, PP. 213-308, 10/80

This paper gives a formal denotational dynamic semantics definition of the sequential parts of Ada*. It describes the meaning of abstract Ada constructs by state-to-state transformations on an abstract machine. First, a brief description is given of the influence of the tasking model on the sequential Ada model presented in the paper. Next, the author discusses the definition of the abstract syntax, AS2, which describes the syntactic properties of programs that have passed the static analysis and have undergone a transformation. This transformation is informally described. Then, the author provides the definition of a model for the storage gives the environment component of the dynamic semantics definition. Finally, the author presents four-examples of the modelling of certain concepts of Ada showing how the defined domains are used as a basis for elaboration, interpretation and evaluation, and pointing out some parts of Ada that makes modelling somewhat difficult. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

DATA TYPES	LANGUAGE STRUCTURE	PROCEDURES
FUNCTIONS	ABSTRACT MACHINES	TRANSFORMATION

AVAILABLE FROM: SPRINGER-VERLAG, INC., NEW YORK NY 10010

DOCUMENT NUMBER: 4621 DOCUMENT DATE: 08/81 TYPE: TECHNICAL REPORT

ARMY SOFTWARE TECHNOLOGY R&D PROGRAM TECHNOLOGY TRANSFER AND ORGANIZATION PLAN

STAFF AUTHOR, U.S.ARMY COMM-ELECTRONICS CMD(CECOM), FT. MONMOUTH, NJ

This document provides the requirements for and definition of the Software Technology Development Division as an organizational component of the Center for Tactical Computer Systems (CENTACS). U.S. Army Communications-Electronics Command (CECOM), to identify, implement, and introduce into operations software development tooling and other products in response to the urgent need defined in the Post Deployment Software Support (PDSS) study. The results of the PDSS are reviewed and the strategy planned for the use of Ada* and the devlopment of the Ada Language System (ALS) are examined. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

TECHNOLOGY TRANSFER	SOFTWARE TOOL SYSTEMS

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA

DOCUMENT NUMBER: 4622 TYPE: TECHNICAL REPORT

OVERVIEW OF AN ADA COMPATIBLE DISTRIBUTED DATABASE MANAGER

CHAN, ARVOLA; DAYAL, UMESHWAR; FOX, STEPHEN; GOODMAN, NATHAN; RIES, DANIEL R.; SKEEN, DALE

This paper provides an overview of the Distributed Database Manager (DDM), A system that supports the use of Adaplex as an interface language. Adaplex results from the embedding of the database sublanguage DAPLEX in the general purpose programming language Ada*. The database management facilities provided by the system are summarized. Then, the facilities for distributed database administration are outlined. Next, the authors sketch the decompiliation approach employed for supporting the Adaplex language. The authors then highlight their strategies for optimizing DAPLEX transactions and summarize their mechanisms for synchronizing concurrent transactions. The authors identify their innovations in the area of recovery management. Finally, the implementation status of the system is reported. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

DATABASE MANAGEMENT SYSTEMS RECOVERY
PREPROCESSORS DISTRIBUTED PROCESSING

AVAILABLE FROM: THE AUTHOR

SPONSORS: DEFENSE ADVANCED RESEARCH PROJECTS AGENCY,ARLINGTON,VA;
ELECTRONIC SYSTEMS DIV., AFSC

DOCUMENT NUMBER: 4623 DOCUMENT DATE: 05/18/82 TYPE: TECHNICAL REPORT

INFORMAL TECHNICAL REPORT - APSE I&T TEST TOOL FUNCTIONAL REQUIREMENTS

STAFF AUTHOR, TRW-FUJITOU, SAN DIEGO, CA

This document describes the requirements for Ada* Programming Support Environmen (APSE) interoperability and transportability tools. A brief summary of Kernel APSE (KAPSE) interface categories is also given. Finally, technical criteria used in evaluating alternative APSE interoperability and transportability tool proposals are listed. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS INTEROPERABILITY PORTABILITY
KERNEL

AVAILABLE FROM: THE AUTHOR
ORDER NUMBER: 7NTASK#7-060
REPORT NUMBER: 40694-3005-UT-01

SPONSORS: NAVAL OCEAN SYSTEMS CENTER

DOCUMENT NUMBER: 4624 DOCUMENT DATE: 04/01/82 TYPE: TECHNICAL REPORT

INFORMAL TECHNICAL INFORMATION - AIE & ALS INTERFACE MATRIX

STAFF AUTHOR, TRW-FUJITOU, SAN DIEGO, CA

This document presents a model of the Ada* Programming Support Environment (APSE) that was constructed so as to compare the Air Force's Ada Integrated Environment (AIE) to the Army's Ada Language System (ALS). The Model APSE is first described. Then, the ALS is compared to the model. Conclusions are then presented that are based on the comparisons. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS

AVAILABLE FROM: THE AUTHOR
ORDER NUMBER: 7NTASK#T-60

SPONSORS: NAVAL OCEAN SYSTEMS CENTER

DOCUMENT NUMBER: 4625 DOCUMENT DATE: 04/20/82 TYPE: TECHNICAL REPORT

INFORMAL TECHNICAL REPORT - ADA PROGRAMMING SUPPORT ENVIRONMENT (APSE) INTEROPERABILITY AND TRANSPORTABILTY: STANDARDS, CONVENTIONS & GUIDELINES

STAFF AUTHOR, TRW-FUJITOU, SAN DIEGO, CA

This document presents guidelines, standards, and conventions that will assist in fulfilling the goals of portability and interoperability of Ada* Programming Support Environments (APSEs). Background information, based on the Stoneman document, is first provided. Then, the terminology relevant to the discussion is defined. Next, various Department of Defense (DOD) and non-DOD standards are examined. Finally, the guidelines are listed. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS	INTEROPERABILITY	PORTABILITY
KERNEL	STANDARDS	

AVAILABLE FROM: THE AUTHOR
ORDER NUMBER: 7NTASK#T-060

SPONSORS: NAVAL OCEAN SYSTEMS CENTER

DOCUMENT NUMBER: 4626 TYPE: JOURNAL ARTICLE

REMARKS ON SOFTWARE COMPONENTS AND PACKAGES IN ADA

RICE, JOHN R.
SOFTWARE ENGINEERING NOTES (ACM SIGSOFT), VOL 8, ISSUE 2, PP. 9-10, 04/83

This article reviews the prospects for the use of software components and packages (i.e., reusable software) in Ada*. The author reviews past experiences in the use of program libraries and points out the problems in the use of such libraries. The author then makes predictions as to how software component concepts can lead to problems when used with Ada. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

LANGUAGE STRUCTURE	PROGRAM LIBRARY SYSTEMS

DOCUMENT NUMBER: 4627 DOCUMENT DATE: 08/80 TYPE: TECHNICAL REPORT

ADA SYNTAX CROSS REFERENCE LISTING

STAFF AUTHOR, SOFTECH,INC. TOTTEN POND RD,WALTHAM,MA 02154

This cross reference listing tells where each syntax term is used in the Ada* productions. (i.e., acceptstatement is used in compoundstatement and in selectalternative). It also serves as an index showing where each term is defined. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

LANGUAGE STRUCTURE

AVAILABLE FROM: SOFTECH, INC., 460 TOTTEN POND RD, WALTHAM, MA 02154
REPORT NUMBER: TP109

DOCUMENT NUMBER: 4628 DOCUMENT DATE: 04/01/81 TYPE: TECHNICAL REPORT

VHSIC PHASE III SOFTWARE ARCHITECTURE STUDY PRELIMINARY HOL DEFINITION

HEIDEBRECHT, J.B.; NIXON, M.R.

This report describes an integrated high order language approach for use in programming very high system integrated circuit (VHSIC) systems. The report advocates the use of 2 languages: (1) Ada* for handling input-output, task synchronization, and the sequential parts of the system and (2) SAL/A for programming most of the algorithm portions of the system which allow or require parallel computation at a lower level. The first part of the report presents an overview of the authors' high order language approach and the rationale behind it. The second part is the reference manual for SAL/A. Two appendices are included that contain the latest SAL/A grammar and provide some programming examples comparing SAL/A and Ada. The final section consists of a detailed review of Ada and concludes with implementation recommendations for parallel architectures. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

FIRMWARE *MICROCODE*

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA

SPONSORS: VERY HIGH SPEED INTEGRATED CKTS,3D139 THE PENTAGON,DC

DOCUMENT NUMBER: 4629 DOCUMENT DATE: 03/80 TYPE: TECHNICAL REPORT

REPORT ON TEACHING ADA

ABBOTT, RUSSELL J.

This report examines an experiment to teach Ada* in a first year graduate class in Computer Science. It is concluded that Ada should not be taught simply as another programming language. Instead, the author feels that Ada should be embedded within, and taught as a tool for, a coherent program design methodology The author first presents a summary of the lessons learned form the experiment and the conclusion to be drawn. Next, features of Ada from the point of teaching difficulty are discussed. Then, the author discusses the recommended approach to Ada and contrasts it with traditional approaches to teaching programming languages. The author then gives more complete information on the course as taught during the Fall 1979 semester. Finally, the author has included the viewgraphs for a presentation on a program design strategy based on Ada. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

PROGRAMMER TRAINING DESIGN METHODOLOGIES DATA STRUCTURES
INFORMATION HIDING STEPWISE REFINEMENT

AVAILABLE FROM: THE AUTHOR
REPORT NUMBER: SA-81-175-WA

SPONSORS: DEFENSE ADVANCED RESEARCH PROJECTS AGENCY,ARLINGTON,VA

DOCUMENT NUMBER: 4630 DOCUMENT DATE: 01/02/80 TYPE: TECHNICAL REPORT

THE INTEGRATION OF ADA AND DAPLEX: ISSUES AND APPROACHES

SMITH, JOHN MILES

This short report explores research issues and approaches to the integration of Ada* and DAPLEX as ADAPLEX for a database mangement system. The structures of both languages are reviewed so as to determine the best possible constructs for ADAPLEX that will achieve the desired goals for the database management system. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

DATABASE MANAGEMENT SYSTEMS
LANGUAGE STRUCTURE
QUERY LANGUAGES

AVAILABLE FROM: THE AUTHOR

DOCUMENT NUMBER: 4631 DOCUMENT DATE: 01/14/77 TYPE: TECHNICAL REPORT

REPORT TO THE HOLWG

AMOROSO, SERAFINO; WEGNER, PETER

This report presents the essential findings of the language evaluation coordinating committee in evaluating, summarizing, and structuring the language evaluation during the initial development efforts of the Ada* programming language. A discussion of the requirements of a common Department of Defense language are given. Then, a summary of all the languages evaluated is provided. Next, each language (among them, PL/I, Pascal, Algol, HAL/S, etc.) is evaluated individually as to the advantages and disadvantages of each language. Finally, recommendations and conclusions are made and a guide is provided for the supporting documentation. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

LANGUAGE EVALUATION
ALGOL
SPL (SYMBOL PROGRAMMING LANGUAGE)
EUCLID
COBOL
JOVIAL
LANGUAGE DESIGN
PL/I
HAL/S
RTL/2
CMS-2
CORAL
PASCAL
PEARL
LIS
FORTRAN
SIMULA
DATA TYPES

DOCUMENT NUMBER: 4632 DOCUMENT DATE: 03/31/81 TYPE: TECHNICAL REPORT

EVALUATION OF ADA AS A COMMUNICATIONS PROGRAMMING LANGUAGE

BRINTZENHOFF, ALTON L.; CHRISTENSEN, STEVEN W.; MOORE, DAVID T.; STONEBRAKER, J. MARC

This report details the results of an evaluation of Ada* as a communications programming language. The report is divided into three major sections coinciding with the efforts conducted within three separate tasks of the overall evaluation effort. The three efforts include an evaluation of the Ada programming language for concurrent programming in communications systems applications, a comparative analysis of the Ada and CHILL programming languages, and a plan for evaluation of Ada as a communications and trusted software programming language. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

PROTOCOLS CONCURRENT PROGRAMMING EFFICIENCY

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: AD A121938
REPORT NUMBER: DCA100-80-C-0037

SPONSORS: DEFENSE COMMUNICATIONS ENGINEERING CENTER

DOCUMENT NUMBER: 4633 DOCUMENT DATE: 11/82 TYPE: TECHNICAL REPORT

ADA CAPABILITY STUDY: DESIGN OF THE MESSAGE SWITCHING SYSTEM AN/TYC-39 USING THE ADA PROGRAMMING LANGUAGE. VOLUME II OF IV

STAFF AUTHOR, GENERAL DYNAMICS DATA SYSTEMS SERVICES,FORT WORTH,TX

An Ada* oriented framework for the design and documentation of the U.S. Army TYC-39 store and forward message switch (military software) system is presented. This document contains a reqirements, design, Ada integrated methodology, and final report section. A methodology to use Ada in specifying requirements, design, and implementation of a system is developed. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

REQUIREMENTS DESIGN IMPLEMENTATION
PROGRAM DESIGN LANGUAGE (PDL)

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: AD-A123305

SPONSORS: US ARMY CENTACS/CORADCOM FT. MONMOUTH,NJ

DOCUMENT NUMBER: 4634 TYPE: TECHNICAL REPORT

THE DEPARTMENT OF DEFENSE'S STANDARDIZATION PROGRAM FOR MILITARY COMPUTERS - A MORE UNIFIED EFFORT IS NEEDED

STAFF AUTHOR, U.S.DEPT. OF DEFENSE, THE PENTAGON, WASH.,DC

This report presents the results of a review of the Department of Defense's efforts to standardize military computers and software used in combat support and weapon systems. The findings, conclusions, and recommendations are summarized in the report. The Department of Defense has developed a standard high-order programming language called Ada* which is expected to be ready for us in 1983. A detailed discussion of the results of the review is provided in appendix I. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

STANDARDIZATION

AVAILABLE FROM: THE AUTHOR
ORDER NUMBER: LCD-80-69

DOCUMENT NUMBER: 4635 DOCUMENT DATE: 11/82 TYPE: TECHNICAL REPORT

ADA CAPABILITY STUDY: DESIGN OF THE MESSAGE SWITCHING SYSTEM AN/TYC-39 USING THE ADA PROGRAMMING LANGUAGE. VOLUME I OF IV

STAFF AUTHOR, GENERAL DYNAMICS DATA SYSTEMS SERVICES,FORT WORTH,TX

An Ada* oriented framework for the design and documentation of the U.S. Army TYC-39 store and forward message switch (military software) system is presented. This document contains a requirements, design, Ada integrated methodology, and final report section. A methodology to use Ada in specifying reqirements, design, and the implementation of a system is developed. (*Ada is a trademark of the U. S. Department of Defense).

INDEX TERMS

REQUIREMENTS DESIGN IMPLEMENTATION
PROGRAM DESIGN LANGUAGE (PDL)

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: AD A123304

SPONSORS: US ARMY CENTACS/CORADCOM FT. MONMOUTH,NJ

DOCUMENT NUMBER: 4636 DOCUMENT DATE: 11/82 TYPE: TECHNICAL REPORT

SOFTWARE DEVELOPMENT METHODOLOGIES AND ADA: ADA METHODOLOGIES CONCEPTS AND REQUIREMENTS COMPARING SOFTWARE DESIGN

FREEMAN, PETER; WASSERMAN, ANTHONY I.

This document discusses software development methodologies as they relate to the computer programming language Ada*. The first section of the document discusses the concepts and requirements for software development in Ada. Next, a summary of the Ada methodology questionnaire is provided. Finally, a comparison of software designs is given. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS DEVELOPMENTAL METHODOLOGIES
INFORMATION SYSTEMS DESIGN
PROGRAMMING TECHNIQUES/METHODOLOGIES

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: AD A123710

SPONSORS: ADA JT. PROG. OFF., ARLINGTON, VA 22209

DOCUMENT NUMBER: 4637 DOCUMENT DATE: 04/82 TYPE: TECHNICAL REPORT

JOVIAL/ADA MICROPROCESSOR STUDY

DEVINE, TERENCE; DUNBAR, TERRY L.; LITTLEJOHN, MICHAEL B.; WHITE, KERRY

This report discusses the application of Ada* and JOVIAL to a microprocessor system. The report investigates the following topics: (1) current and future microprocessor technology, (2) existing compilers on small hosts, (3) advantages and disadvantages of hosting a development system on a microprocessor, (4) Ada language issues, and (5) the design of an Ada Integrated Environment (AIE) for a microprocessor. The report concludes that a workable Ada capability can be hosted on a Motorola MC68000, Zilog Z8000, Intel 8086, Intel 432 or the soon-to-be-marketed National Semiconductor 16032. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

JOVIAL MICROPROCESSORS COMPILERS
DEBUGGING

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: AD A116352
REPORT NUMBER: RADC-TR-82-61

SPONSORS: ROME AIR DEVELOPMENT CENTER, GAFB, ROME, NY 13441

DOCUMENT NUMBER: 4638 DOCUMENT DATE: 11/82 TYPE: TECHNICAL REPORT

TRANSFORMATION OF ADA PROGRAMS INTO SILICON

ORGANICK, DR. E.; LINDSTROM, DR. G.; SMITH, D.K.; SUBRAHMANYAM, T. CARTER

An Ada* oriented framework for the design and documentation of the U.S. Army TYC-39 store and forward message switch (military software) system is presented. This document contains a requirements, design, Ada integrated methodology, and final report section. A methodology to use Ada in specifying requirements, design, and implementation of a system is developed. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

PROTOCOLS FIRMWARE TRANSFORMATION
SPECIFICATIONS

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: AD A122967
REPORT NUMBER: UTEC-82-103

SPONSORS: DEF ADB RES PROJ AGENCY,1400 WILSON BLVD,WASHINGTON,DC

DOCUMENT NUMBER: 4639 DOCUMENT DATE: 06/82 TYPE: DISSERTATION

INVESTIGATION OF THE ADA LANGUAGE IMPLEMENTATION OF THE HELLENIC COMMAND CONTROL AND INFORMATION SYSTEM

KOUTSOTOLIS, APOSTOLOS

This thesis examines the features of the Ada* language, describes the structure of the Hellenic Command Control and Information System (HCCIS), and investigates the use of Ada for the program development of HCCIS. The author briefly discusses aspects of software acquisition and management. Then, the major features and facilities of the Ada language and its support environment are described. Next, the characteristics and requirements of the HCCIS for software support are examined and evaluated. Both the Ada language and HCCIS are then compared for compatibility. Finally, the author summarizes and concludes whether or not the Ada language can be used as the HCCIS programming language. (*Ada is a trademark for the U.S. Department of Defense).

INDEX TERMS

INFORMATION SYSTEMS	COMMAND, CONTROL, &COMMUNICATION APPLICATION	
RELIABILITY	MAINTAINABILITY	SECURITY
PRODUCTIVITY	QUALITY ATTRIBUTES	ACQUISITION MANAGEMENT

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: AD A122435

SPONSORS: NAVAL POSTGRADUATE SCHOOL,MONTEREY, CA 93940

DOCUMENT NUMBER: 4640 DOCUMENT DATE: 11/82 TYPE: TECHNICAL REPORT

ADA CAPABILITY STUDY: DESIGN OF THE MESSAGE SWITCHING SYSTEM AN/TYC-39 USING THE ADA PROGRAMMING LANGUAGE. VOLUME IV OF IV

STAFF AUTHOR, GENERAL DYNAMICS DATA SYSTEMS SERVICES,FORT WORTH,TX

An Ada* oriented framework for the design and documentation of the U.S. Army TYC-39 store and forward message switch (military software) system is presented. This document contains a requirements, design, Ada Integrated Methodology, and final report section. A methodology to use Ada in specifying requirements, design, and the implementation of a system developed. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

REQUIREMENTS	DESIGN	IMPLEMENTATION
PROGRAM DESIGN LANGUAGE (PDL)		

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: AD A123307

SPONSORS: US ARMY CENTACS/CORADCOM FT. MONMOUTH,NJ

DOCUMENT NUMBER: 4641 DOCUMENT DATE: 11/82 TYPE: TECHNICAL REPORT

ADA CAPABILITY STUDY: DESIGN OF THE MESSAGE SWITCHING SYSTEM AN/TYC-39 USING THE ADA PROGRAMMING LANGUAGE. VOLUME III OF IV

STAFF AUTHOR, GENERAL DYNAMICS DATA SYSTEMS SERVICES,FORT WORTH,TX

This document presents an Ada* oriented framework for the design and documentation of the U.S. Army TYC-39 store and forward message switch (military software) system. The document contains a requirements, design, Ada Integrated Methodology, and final report. A methodology to use Ada in specifying requirements, design, and the implementation of a system is developed. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

DOCUMENTATION	REQUIREMENTS	DESIGN
IMPLEMENTATION		

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: AD A123306

SPONSORS: US ARMY CENTACS/CORADCOM FT. MONMOUTH,NJ

DOCUMENT NUMBER: 4645 TYPE: JOURNAL ARTICLE

INTERACTIVE ADA* IN THE ARCTURUS ENVIRONMENT

STANDISH, THOMAS A.
ACM ADA LETTERS, VOL 3, ISSUE 1, PP. 23-35, 08/83

This article provides a sketch of some interactive Ada* capabilities in ARCTURUS, a programming support environment for Ada. The author also provides a detailed scenario of interactive Ada programming at the very simplest level, using Ada-oriented variants of interactive programming techniques. The use of the text editing facilities of ARCTURUS are also examined. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS USER-INTERACTIVE SYSTEMS EDITORS
PROGRAMMING TECHNIQUES/METHODOLOGIES

SPONSORS: DEFENSE ADVANCED RESEARCH PROJECTS AGENCY,ARLINGTON,VA;
ADA JT. PROG. OFF., ARLINGTON, VA 22209

DOCUMENT NUMBER: 4646 TYPE: JOURNAL ARTICLE

ADA-EUROPE GUIDELINES FOR ADA COMPILER SPECIFICATION AND SELECTION

NISSEN, J.C.D.; WICHMANN, B.A.; DOWLING, TED; GOLDSACK, STEPHEN; JEANROND, HANS; MONTGOMERY, ALAN; PIERCE, RON; REFICE, MARIO; NGUYEN THE THANH; TAFVELIN, SVEN
ACM ADA LETTERS, VOL 3, ISSUE 1, PP. 37-50, 08/83

This article lists the characteristics of an implementation that should be taken into account in the specification or selection of an Ada* compiler. Design issues and tool interfaces of Ada compilers are reviewed. Next, retargeting and rehosting processes of an Ada compiler are discussed. Finally, contractual matters and compiler validation is examined. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

COMPILERS

DOCUMENT NUMBER: 4647 TYPE: JOURNAL ARTICLE

AN ALGEBRAIC APPROACH TO REUSABLE ADA COMPONENTS

LITVINTCHOUK, S.D.; MATSUMOTO, A.S.
ACM ADA LETTERS, VOL 3, ISSUE 1, PP. 51-54, 08/83

This article proposes a design methodology to enable the algebraic specification of Ada* programs with components that can be reused either within the current system or within future systems. The authors point out problems with the "Methodman" approach and then introduce their approach, pointing out the advantages of an algebraic approach. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

REUSABILITY DESIGN METHODOLOGIES

DOCUMENT NUMBER: 4648 TYPE: JOURNAL ARTICLE

AN ADA LANGUAGE TYPE CHECKING PROBLEM AND TWO MORALS

WETHERELL, C.S.; QUINN, M.E.
ACM ADA LETTERS, VOL 3, ISSUE 1, PP. 55-56, 08/83

This brief article reviews a simple type checking problem given to some Ada* compilers. Two general rules are offered for the design of compilers. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

AUTOMATED FAULT DETECTION COMPILERS

DOCUMENT NUMBER: 4649 TYPE: JOURNAL ARTICLE

LIFE CYCLE SUPPORT IN THE ADA* ENVIRONMENT

MCDERMID, JOHN; RIPKEN, KNUT
ACM ADA LETTERS, VOL 3, ISSUE 1, PP. 57-62, 08/83

This article is a management summary that briefly describes the aims, the conduct, and the most salient conclusions and recommendations of the study entitled "Life-cycle support in the *Ada Environment." The article reviews the methods and tools for a coherent Ada Programming Support Environment (APSE) and expands on Methodman by giving a description of a particular instance of a coherent methodology and by describing an example of the usage of such a methodology. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS DESIGN METHODOLOGIES

DOCUMENT NUMBER: 4650 TYPE: JOURNAL ARTICLE

EARLY EXPERIENCE WITH THE PROGRAMMING LANGUAGE ADA (*)

PERSCH, GUIDO; DAUSMANN, MANFRED; GOOS, GERHARD
ACM ADA LETTERS, VOL 3, ISSUE 1, PP. 63-70, 08/83

This article presents the authors' experience with programming using the Ada* language. First, the authors discuss the process of programming-in-the-large. Finally, programming-in-the-small is described. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

PROGRAMMING TECHNIQUES/METHODOLOGIES

DOCUMENT NUMBER: 4651 TYPE: BIBLIOGRAPHY

CITATIONS FROM THE INSPEC DATA BASE: ADA PROGRAMMING LANGUAGE (1979-FEB 83)

STAFF AUTHOR

This bibliography contains citations concerning the high order programming language Ada*. The abstracts reference reports on the design, implementation, grammar, compilers and programming methodology for Ada. Many references pertain to microcomputers designed to use Ada, and other references discuss implementation problems. Many examples are given for using Ada in real-time programming, or multiprogramming, applications. There are 279 citations contained in this bibliography. It also contains ordering information for many of the reports cited in the bibliography. Also included is a sample citation explaining what is contained in a citation. A list of all titles in the bibliography is given with their appropriate page number. A subject term index enumerates the page location and accession number. (*Ada is a trademark of the U.S. Department of Defense).

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA

DOCUMENT NUMBER: 4652 DOCUMENT DATE: 03/15/81 TYPE: SPECIFICATION

ADA INTEGRATED ENVIRONMENT II COMPUTER PROGRAM DEVELOPMENT SPECIFICATION - VOLUME II

STAFF AUTHOR, COMPUTER SCIENCES CORP.;
STAFF AUTHOR, SOFTWARE ENGINEERING ASSOCIATES

This document presents the Computer Program Development Specification for the Computer Program Configuration Item (CPCI) known as the Ada* Programming Support Environment (APSE) Command Language Interpreter (ACLI). The specification establishes the performance, design, and test requirements for the ACLI. Quality assurance provisions and documentation are also reviewed. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS	COMMAND LANGUAGES	QUALITY ASSURANCE
DOCUMENTATION	TESTING	REQUIREMENTS

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: AD A109 981
REPORT NUMBER: 81-365

SPONSORS: ROME AIR DEVELOPMENT CENTER, GAFB, ROME, NY 13441

DOCUMENT NUMBER: 4653 DOCUMENT DATE: 08/06/82 TYPE: TECHNICAL REPORT

RESOURCE IMPLICATIONS OF ADA AS THE NATO STANDARD HIGH ORDER LANGUAGE

STAFF AUTHOR, CENTRE TECHNIQUE,BOX174, 2501CD HAGUE,THE NETHERLANDS

This report is the result of a study perfomed by the Ad-Hoc Working Group on High Order Languages of the Military Command, Control & Information Systems Working Group (MCCISWG). The background of the NATO Command & Control Information System (NCCIS) and the work of the Ad-Hoc Working Group on High Order Languages toward the study and assessment of the standardization of high order languages is reveiwed. The resource implications of adopting a standard high order language for NCCIS are considered and aspects of a programming support environment are reviewed. Next, Ada* and the Ada Programming Support Environment (APSE) are analyzed as to standardization, availability, maturity assessment, integration with existing software, and portability. Finally, conclusions are made that demonstrate the implications of Ada/APSE to the NCCIS. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS PROGRAMMER TRAINING COMPILERS
PORTABILITY STANDARDIZATION

AVAILABLE FROM: THE AUTHOR
REPORT NUMBER: MCCISWG-WP/180

DOCUMENT NUMBER: 4654 DOCUMENT DATE: 03/08/79 TYPE: TECHNICAL REPORT

RED LANGUAGE REFERENCE MANUAL

NESTOR, JOHN; VAN DEUSEN, MARY

This document is a language reference manual for the Red language, one of the proposed languages designed in accordance with the Department of Defense (DOD) Steelman requirements of the DOD common language effort. That effort eventually resulted in the definition of the Ada* programming language. This manual first defines the Red Language design goals and the semantic framework of the language The document is then divided into four major parts: (1) basic language features that are roughly equivalent to the Pascal language, (2) intermediate language features, (3) advanced language features that are mainly for use by systems programmers, and (4) the appendices and index. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

LANGUAGE STRUCTURE DATA TYPES PROCEDURES
FUNCTIONS LANGUAGE DESIGN

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
REPORT NUMBER: IR-310-2

SPONSORS: INTERMETRICS,INC.,CAMBRIDGE,MA 02138

DOCUMENT NUMBER: 4655 DOCUMENT DATE: 04/30/79 TYPE: TECHNICAL REPORT

RED LANGUAGE TEST TRANSLATOR USER'S GUIDE

STAFF AUTHOR, INTERMETRICS,INC.,CAMBRIDGE,MA 02138

This document is a user's guide to the Test Translator for the Red language. The Red language is one of the proposed languages designed in accordance with the Department of Defense (DOD) Steelman requirements of the DOD Ada* language effort. The translator accepts Red source programs, translates them into an intermediate format, and elaborates them. It is written in the SIMULA language and runs on a PDP-10 computer with the TOPS-20 operating system. The host environment is described and use of the translator is examined. A list of the sample programs is provided and the implementation status of the translator is discussed. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

TRANSLATORS
REPORT NUMBER: IR-386

SPONSORS: INTERMETRICS,INC.,CAMBRIDGE,MA 02138

DOCUMENT NUMBER: 4656 DOCUMENT DATE: 01/79 TYPE: TECHNICAL REPORT

DEPARTMENT OF DEFENSE REQUIREMENTS FOR THE PROGRAMMING ENVIRONMENT FOR THE COMMON HIGH ORDER LANGUAGE - PEBBLEMAN REVISED

DEPARTMENT OF DEFENSE

This document describes the common environment which is desired or required for the support of Ada*. The document reviews the administration and policy for the environment and reviews the suggested developmental and maintenance tools necessary for the environment. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS DEVELOPMENTAL TOOLS AND TECHNIQUES
MAINTENANCE TOOLS AND TECHNIQUES

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA

DOCUMENT NUMBER: 4657 TYPE: JOURNAL ARTICLE

SUMMARY OF ADA LANGUAGE CHANGES

BROSGOL, BENJAMIN M.
ADA U.K. NEWS, VOL 2, ISSUE 4, PP. 59-68, 01/82

This article summarizes the principal modifications to the Ada* programming language, indicating both their scope and the reasons for their adoption. These changes take several forms: clarifications where the language definition was incomplete, corrections where the definition was inaccurate or inconsistant, and simplifications where rules could be unified or implementation difficulties reduced. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

LANGUAGE STRUCTURE

SPONSORS: DEFENSE ADVANCED RESEARCH PROJECTS AGENCY,ARLINGTON,VA

DOCUMENT NUMBER: 4658 TYPE: TECHNICAL REPORT

UNITED KINGDOM MINISTRY OF DEFENCE - ADA SUPPORT SYSTEM STUDY - PHASE 2 &3 REPORTS

STAFF AUTHOR, SYSTEMS DESIGNERS LIMITED, UNITED KINGDOM;
STAFF AUTHOR, SOFTWARE SCIENCES LTD., UNITED KINGDOM

This document contains the phase two and three reports of the Support System study for the Ada* programming language. In the phase two report, the proposed foundation system is introduced. Following an overview which places the various system components in context, the authors describe the main facilities offered by the system. The viewpoint adopted is basically that of a system user. The authors are then concerned with the logical organization of the system, describing the various types of data that the system maintains and describing the interfaces between the system components. The description of the system is given and the implementation is discussed. The phase three report discusses a number of aspects of the proposed system, particularly interfaces, in greater detail than in the phase two report. (*Ada is a trademark of the U. S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS	FILE MANAGEMENT SYSTEMS	COMPILERS
LINKAGE EDITORS	AUTOMATED TESTING	PORTABILITY
EFFICIENCY		

DOCUMENT NUMBER: 4659 TYPE: JOURNAL ARTICLE

OBJECT-ORIENTED LANGUAGES TACKLE MASSIVE PROGRAMMING HEADACHES

KAHN, KEVIN C.
ELECTRONICS, VOL 55, ISSUE 23, PP. 141-145, 11/17/82

This article gives an overview of the methodology called object-oriented programming. It then discusses the approach of early programming languages toward program modularity. It further states that little emphasis was placed on data modularity of early programs. This article uses the Ada* language as an example for its discussions of object-oriented programming modules. These discussions include encapsulated data structures and active and passive object types. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

ERROR ANALYSIS	MODULARITY	MODULAR PROGRAMMING
PASCAL	STRUCTURED PROGRAMMING	DATA TYPES
CONTROL STRUCTURES	DATA STRUCTURES	LANGUAGE EVALUATION

DOCUMENT NUMBER: 4660 TYPE: JOURNAL ARTICLE

ADA ACQUIRES TWO BROAD SUPPORT TOOLS

COSTLOW, TERRY
ELECTRONICS, VOL 55, ISSUE 18, PP. 54-56, 09/08/82

This article discusses the release of two Ada* support tools. The Ada Language System which includes the broad support needed for developing application packages and a full implementation of an Ada compiler for validation testing. The concern of the author is whether the new Ada compiler can be upgraded to run the latest version of Ada language in a short time frame. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

COMPILERS	SOFTWARE TOOL SYSTEMS	VALIDATION

DOCUMENT NUMBER: 4661 TYPE: JOURNAL ARTICLE

VERIFIABILITY SOUGHT FOR SPACE SHUTTLE

HINDIN, HARVEY J.
ELECTRONICS, VOL 54, ISSUE 11, PP. 52-54, 06/02/81

This article addresses the effort under way to upgrade the space shuttle's software. It talks about the concept of verifiable software. Also discussed is the change from the current HAL/S language to Ada* language for future shuttle software. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

AVIONICS APPLICATIONS	HAL/S	DESIGN ANALYSIS

DOCUMENT NUMBER: 4662 TYPE: JOURNAL ARTICLE

ADA MARKET TO APPROACH $750 MILLION BY 1986

STAFF AUTHOR
DEFENSE ELECTRONICS, VOL 14, ISSUE 12, PP. 38-40, 12/82

This article predicts that the Ada* market will shift over the 1982 - 1986 period from its profile of support software to one dominated by application software. It also discusses the early use of Ada by the military and predicts that the civilian market will increase its use of Ada. Dollar estimates are provided. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

ACQUISITION COSTS

DOCUMENT NUMBER: 4663 TYPE: JOURNAL ARTICLE

ADA STRENGTHENS RECOGNITION THROUGH ADAPTABILITY

LOVEMAN, DAVID B.
MILITARY ELECTRONICS/COUNTERMEASURES, PP. 54-59, 10/82

This article covers the development of the Ada* language for embedded computer systems. An explanation of embedded computer system applications on a distributed Ada virtual machine is provided in this article. It also discusses the development of the Ada Programming environment projects and the tools that will be provided by the project. It includes a general description of the programmer workstation. Finally, the development of a distributed Ada programming environment is discussed. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

EMBEDDED COMPUTER SYSTEMS
NETWORKS
SOFTWARE TOOL SYSTEMS
DEVELOPMENTAL TOOLS AND TECHNIQUES
COMPUTER COMMUNICATIONS NETWORKS
VIRTUAL MACHINES
PROGRAMMER PRODUCTIVITY

DOCUMENT NUMBER: 4664 TYPE: JOURNAL ARTICLE

ADA'S IMPACT ON ATE

LOVEMAN, DAVID B.
MILITARY ELECTRONICS/COUNTERMEASURES, PP. 59-65, 07/81

This article discusses the problems related to Automatic Test Equipment (ATE). A discussion of Ada* as a solution to the problems of ATE software development and maintenance as included in this article. A comparison of the Ada and ATLAS languages is provided. Then the development of operational test software for automatic test equipment is discussed. Finaliy, the integrated ATLAS Programming System (IAPS) as a solution to the ATE software preparation problem is outlined in detail. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

AUTOMATED TESTING
MAINTENANCE TOOLS AND TECHNIQUES
TEST LANGUAGES
ATLAS

DOCUMENT NUMBER: 4665 TYPE: JOURNAL ARTICLE

PENTAGON ORDERS END TO COMPUTER BABEL

BROAD, WILLIAM J.
SCIENCE, VOL 211, PP. 31-33, 01/02/81

This article speaks of the Pentagon's decision to develop a single computer language called Ada* to be used by the U.S. military. It gives an overview of the development of the Ada language. It also discusses the hopes of the Pentagon to entice universities, companies, foreign vendors and NATO allies to accept the Ada language. Finally, it comments on the researchers who are not anxious to have one universal computer language. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

COST EFFECTIVENESS

DOCUMENT NUMBER: 4666 TYPE: JOURNAL ARTICLE

USING ADA-INFORMATION

KNAPPER, ROBERT J.; MATHIS, ROBERT F.
ACM ADA LETTERS, VOL 1, ISSUE 1, PP. 29-30, 07/81

This article explains a new directory/account established to provide information on Ada* to the general public. The directory name is ADA-INFORMATION located on the host ECLB (a DEC-SYSTEM/20 computer using the TOPS-20 operating system) which can be accessed through the ARPANET or via Telenet. Information on the following topics is available through this directory: the Ada Joint Program Office staff, approved Ada derived names, classes and seminars, where to obtain the reference manual, textbooks, planned implementations, and the mailing list of parties interested or participating in the Ada effort. This article also presents information on setting up an ID-password account for the Telenet. (*Ada is a trademark of the U.S. Department of Defense).

DOCUMENT NUMBER: 4667 TYPE: JOURNAL ARTICLE

AN ADA* LANGUAGE PROGRAMMING COURSE

WAUGH, D.W.
ACM ADA LETTERS, VOL 11, ISSUE 5, PP. 34-41, 04/83

This paper describes the design and operation of a course on writing Ada* programs. The first part of this artical describes the students who attended, the materials available for use, and some of the logistical parameters which influenced the design and operation of the course. The article then describes the course lectures. Seven lectures are given which are followed by an appropriate exercise. The exercises cover the following material: acquaint students with the compiler, packing specifications, package bodies and driver programs, exceptions, access types, tasking and generics. The article concludes with several observations on the course. Exerpts of program segments used in teaching this course are included. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

PROGRAMMER TRAINING

AD-A169 835 ADA (TRADE NAME) BIBLIOGRAPHY VOLUME 2(U) ITT RESEARCH 2/3
INST ROME NY MAR 84 RDA903-83-C-0306

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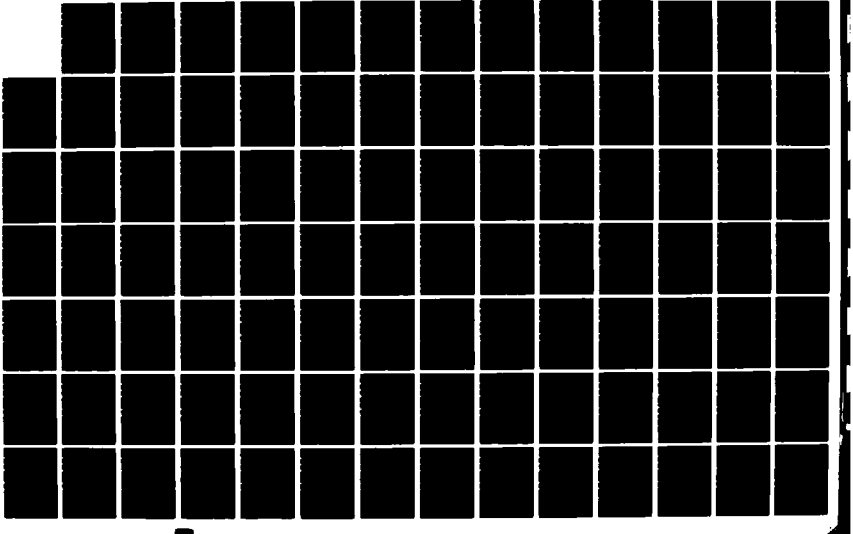

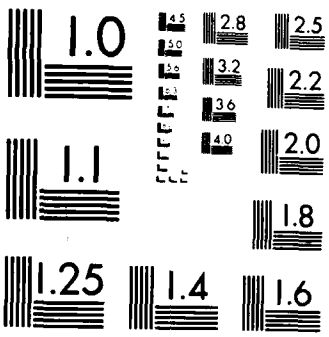
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DOCUMENT NUMBER: 4668 TYPE: JOURNAL ARTICLE

USING ADA FOR COMMERCIAL SOFTWARE

GARDNER, MICHAEL R.
ACM ADA LETTERS, VOL II, ISSUE 5, PP. 56-59, 04/83

The DoD-sponsored Ada* language is suitable for embedded military computer systems and also for commercial use in large-scale systems of programs involving thousands of lines of code and several programmers. The package, containing a set of declarations and subroutines designed to solve a group of related problems, can be used by several programs. Also, the packages have uniformity across programs to promote operator ease in learning to use a system. Shared codes save time and eliminate multiple revisions during debugging and maintenance. Ada is a strongly typed language and has both advantages and disadvantages. Ada has enumeration types and also exception-handling. The language is learnable in a reasonable time. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

EXCEPTION HANDLING	PRODUCTIVITY	DATA TYPES
LANGUAGE STRUCTURE	PROGRAMMER PRODUCTIVITY	PRODUCTIVITY FACTORS

DOCUMENT NUMBER: 4669 TYPE: JOURNAL ARTICLE

AN OVERVIEW OF THE DESIGN OF AN ADA BALLISTICS SYSTEM

RUDOLPH, BRUCE L.
ACM ADA LETTERS, VOL 11, ISSUE 5, PP. 60-61, 04/83

This article describes the production of a modular software system for the development of the Ada* Ballistics System. It presents the approach taken in the redesign of the existing Fortran system. Finally, the article discusses the difference between the Ada Ballistics System and the original ballistics simulator. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

BALLISTIC MISSILE DEFENSE		FORTRAN
SIMULATORS	MODELLING AND SIMULATION TOOLS	
MODULARITY		

DOCUMENT NUMBER: 4670 TYPE: JOURNAL ARTICLE

EXPERIENCES WITH MATRIX MULTIPLICATION USING ADA TASKS

FERNANDEZ, JOHN D.; CARLISLE, HOMER; SHEPPARD, SALLIE
ACM ADA LETTERS, VOL 11, ISSUE 5, PP. 76-84, 04/83

This paper relates the experiences in learning Ada* using Ada/Ed and presents a problem in its various stages of development and solution. The major focus of the effort centers on the use of Ada tasking facilities and the conversion of the final solution into a generic package. Multiplication of square matrices selected as the basis for the study, since the calculation of inner products (row x column) provided an excellent opportunity for using tasks. The paper also includes several program segments on matrix multiplication and tasking written in Ada. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

NUMERICAL MANIPULATION LANGUAGE STRUCTURE DATA TYPES
MODULES

DOCUMENT NUMBER: 4671 TYPE: JOURNAL ARTICLE

SELF-REPRODUCING ADA(*) TASKS. THE PROBLEM OF TERMINATION

LOMUTO, NICO
ACM ADA LETTERS, VOL 11, ISSUE 5, PP. 62-75, 04/83

This report provides a detailed summary of the Ada* related activities carried out, products produced, and services provided during the first year's operation of the Ada* Information Clearinghouse. The topics included in this report are: the establishment and maintenance of an Arpanet/Telenet Ada activities directory, the design, implementation and maintenance of an Ada bibliographic data base, the publishing of an Ada Bibliography, the development and maintenance of VAX-resident data bases using Digital's DATATRIEVE, the design and implementation of an integrated, automated office environment, the management of electronic message files as a source of documentation and computerized communication and the distribution and configuration management of ALS & AIE specification documents. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

IMPLEMENTATION CORRECTNESS RECURSION
TOTAL CORRECTNESS

DOCUMENT NUMBER: 4672 TYPE: TECHNICAL REPORT

CASE STUDY II FINAL REPORT DEVELOPED FOR LARGE SCALE SOFTWARE SYSTEM DESIGN OF THE MISSILE MINDER AN/TSQ-73 USING THE ADA PROGRAMMING LANGUAGE

STAFF AUTHOR, CONTROL DATA CORP.,SHREWSBURY,NJ

This report documents the research and development effort for the design and documentation of a large scale system using the Ada* programming language (MIL-STD-1815). The system used in this research is the Missle Minder System AN/TSQ-73. The report contains activities and findings in the performance of the project. These activities and findings include adequacy of design methods used in the design of the AN/TSQ-73 system, system design issues, Ada language issues, and the career types required for the system design. Included in the appendices of this document are references, Ada system designer's guide, system entity diagrams, Ada-based program and system design language, data flow diagrams, data dictionary, structure charts and Ada code listings. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

STRUCTURED PROGRAMMING LANGUAGE STRUCTURE SYSTEM DESIGN
PROGRAMMER TRAINING DESIGN METHODOLOGIES DOCUMENTATION
VALIDATION AUTOMATED DESIGN TOOLS SCHEDULING
PROGRAM DESIGN METHODOLOGIES
PROGRAMMING TECHNIQUES/METHODOLOGIES
PROGRAM DESIGN LANGUAGE (PDL) SOFTWARE TOOLS
DATA FLOWGRAPHS

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA

SPONSORS: U.S.ARMY COMM-ELECTRONICS CMD(CECOM), FT. MONMOUTH, NJ

DOCUMENT NUMBER: 4673 DOCUMENT DATE: 10/01/83 TYPE: TECHNICAL REPORT

STRATEGY FOR A DOD SOFTWARE INITIATIVE

DRUFFEL, LARRY

This document proposes a strategy and an initial top-level plan for a Department of Defense wide Software Initiative to improve the state of practice in the U.S. DoD Community concerning the acquisition, management, development, and support of computer software for military systems. Overall objectives are proposed and the steps to refine and elaborate the initial top-level plan are included. The initiative's goal is to improve software productivity while achieving greater system reliability and adaptability. In some respects, the initiative is already under way. The Ada* Program includes projects to develop Ada Programming Support Environments (APSE), Ada-based education and training, and a methodological framework for using an APSE. The Ada Program has established both the sociological and technological basis for sharing tools. It will be a cornerstone for this initiative. With Ada serving as a focus during the early stages, the initiative is responsive to recent Congressional direction to accelerate adoption of Ada. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

EMBEDDED COMPUTER SYSTEMS		DEVELOPMENT MANAGEMENT
MANAGEMENT TOOLS AND TECHNIQUES		ACQUISITION MANAGEMENT
DEVELOPMENT MANAGEMENT	QUALITY METRICS	DATA COLLECTION

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: AD A121737

DOCUMENT NUMBER: 4674 DOCUMENT DATE: 10/01/83 TYPE: TECHNICAL REPORT

STRATEGY FOR A DOD SOFTWARE INITIATIVE VOLUME II: APPENDICES

DRUFFEL, LARRY

This volume contains appendices providing background information related to the strategy and plan in the main volume. It includes a brief history and acknowledgements, assessments of the opportunities the Initiative might pursue, technical visions of two possible futures in the early 1990's, summaries of related Defense Science Board recommendations, summaries of foreign initiatives, summary of Joint Task Force identified software problems, summary of Software Technology Initiative questionnaire results and an estimate of potential software productivity gains. It includes discussion of the Ada* Programming Support Environment (APSE), Ada-based education and training, and a methodological framework for using an APSE. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

MAINTENANCE	RELIABILITY	QUALITY ASSURANCE
PRODUCTIVITY	DISTRIBUTED PROCESSING	ACQUISITION MANAGEMENT
ARCHITECTURE	TECHNOLOGY TRANSFER	SOFTWARE TOOL SYSTEMS
KNOWLEDGE BASED SYSTEMS		

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: AD A121738

DOCUMENT NUMBER: 4675 TYPE: JOURNAL ARTICLE

ADA HOW BIG A DIFFERENCE WILL IT MAKE IN SOFTWARE?

LOVEMAN, DAVID B.
MILITARY ELECTRONICS/COUNTERMEASURES, PP. 74-84, 05/81

This article discusses the Ada* Programming Support Environments. It also discusses the requirements and facilities provided in the Ada programming environments. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

EMBEDDED COMPUTER SYSTEMS		SYSTEM INTEGRATION
REQUIREMENTS	KERNEL	SOFTWARE TOOL SYSTEMS

DOCUMENT NUMBER: 4676 DOCUMENT DATE: 07/83 TYPE: BIBLIOGRAPHY

CATALOG OF RESOURCES FOR EDUCATION IN ADA AND SOFTWARE ENGINEERING (CREASE)

STAFF AUTHOR, IIT RESEARCH INSTITUTE,CHICAGO,IL 60616

This catalog is intended to serve as a source of information about resources available to those who are planning education and training programs in Ada*. It consists of questionnaires completed by offerors of these educational resources bound into a single volume. The questionnaires are presented in two sections, courses and textbooks. The courses are further subdivided into those offered by individuals, by companies, and by universities. Information provided on courses includes the course title, its objectives, orientation, Ada concepts covered, intended audience, required programming background, course materials provided, which computer and operating system is used in the course (if any), and whether an Ada compiler is used. The name and address of the offerer of the course is also included. The section on textbooks provides a full citation and an abstract for each textbook. In addition a bibliography of Ada reference books is provided. The final section contains instructions on how to prepare the course information questionnaire. Sample questionnaire forms are also included in this catalog. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

PROGRAMMER TRAINING	TECHNOLOGY TRANSFER

AVAILABLE FROM: DATA & ANALYSIS CENTER FOR SOFTWARE (DACS)
ORDER NUMBER: CREASE

DOCUMENT NUMBER: 4677 DOCUMENT DATE: 04/01/82 TYPE: TECHNICAL REPORT

KERNEL ADA PROGRAMMING SUPPORT ENVIRONMENT (KAPSE) INTERFACE TEAM: PUBLIC REPORT VOL. 1

OBERNDORF, PATRICIA A.

This report gives the initial activities of the Kernel Ada* Programming Support Environments (KAPSE). It presents the outlines of the KAPSE Interface Team (KIT) and Industry/Academia Team meetings. Finally, this report contains a copy of each paper presented at the February 1982 Industry/Academia Team Meeting. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

ARCHITECTURE	KNOWLEDGE BASED SYSTEMS	PORTABILITY
INTERFACE CONTROL	TECHNOLOGY TRANSFER	SOFTWARE TOOL SYSTEMS

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
REPORT NUMBER: NOSC TD 509

SPONSORS: ADA JT. PROG. OFF., ARLINGTON, VA 22209

DOCUMENT NUMBER: 4679 TYPE: TECHNICAL REPORT

THE GREEN LANGUAGE: A FORMAL DEFINITION

CARLSON, WILLIAM E.

This document is a preliminary draft of the formal definition of the Green Programming Language. It defines the lexical elements of the green language. It describes the types in the green language and the rules for declaring constants and variables. This document explains the use of names, variables, expressions, statements, declarative parts, subprograms, blocks and operations. It then describes the rules defining the scope of declarations and the rules defining which identifiers are visible at various points in the text of the program. This document also describes the overall structure of programs and the facilities for dealing with errors or other exceptional situations that arise during program execution. This document is the initial Ada* formal definition delivered by Honeywell in April 1979. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

COMPILERS	EXCEPTION HANDLING	LANGUAGE STRUCTURE
LANGUAGE DESIGN	SYNTAX GRAPHS	DATA SEMANTICS
DOCUMENTATION		

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: AD A073714

DOCUMENT NUMBER: 4680 DOCUMENT DATE: 02/03/82 TYPE: TECHNICAL REPORT

MAINTENANCE/DESIGN DOCUMENTATION FOR THE INTERMETRICS ADA/TOPS-20 COMPILER

BELMONT, P.A.

This document provides maintenance/design documentation for IAPC-20, the Intermetrics Ada*/TOPS-20 Prototype Compiler. The design of the run-time systems and run-time model of code generation and data object layout are covered in depth. It describes the BADA implementation of arrays and records, including outlines of the operations performed to support the related language constructs. This document describes the layout of records and arrays in memory. It only discusses ordering and logical layout. Then it outlines the operations performed to support the language constructs related to arrays and records. It also includes descriptions of auxiliary data structures generated by some of them, and points out opportunities for future optimizations. This document mentions the protocol to be used for subprogram call/return in DEC-20 Ada, as well as related issues such as stack frame format and uplevel addressing. Finally, it explains the operations performed to allocate and initialize a stack frame on subprogram or block entry, and to deallocate it on exit. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

COMPILERS	DOCUMENTATION	LANGUAGE STRUCTURE
SYSTEM DESIGN	PROTOTYPES	

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: 4002
REPORT NUMBER: IR-MA-079

SPONSORS: INTERMETRICS,INC.,CAMBRIDGE,MA 02138

DOCUMENT NUMBER: 4681 DOCUMENT DATE: 01/08/82 TYPE: TECHNICAL REPORT

ADVANCED SOFTWARE PRODUCTION ENVIRONMENTS

STANDISH, THOMAS A.

This report is the first quarterly report which gives an overview of an approach to the use of Ada* in an interactive programming environments. This report describes progress on a prototype Ada programming environment incorporating a uniform user interface and featuring: fast context switching, typescript management, an Ada command language, mixed editing modes, and an interactive Ada language processor. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

EDITORS	COMMAND LANGUAGES	PROGRAM UNDERSTANDING

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: 1001/938

SPONSORS: DEFENSE ADVANCED RESEARCH PROJECTS AGENCY,ARLINGTON,VA

DOCUMENT NUMBER: 4682 TYPE: TECHNICAL REPORT

A SOFTWARE DEMAND METRIC FOR THE ADA LANGUAGE

TRAISTER, LEON M.

This book treats software written in the Ada* Language as a source of demand on the execution machinery. A metric for this demand is developed by considering the access and storing of operators and operands programmed in Ada in the context of an abstract machine, a canonical processor. Execution power for Ada Language statements on a real processor is determined from the canonical work and actual processor time. Experiments are used to characterize the Ada Language statements and sequences of statements which implement processing functions. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

MEMORY MANAGEMENT	PROGRAM DESIGN METHODOLOGIES	
DESIGN METHODOLOGIES	QUALITY METRICS	SOFTWARE PHYSICS
PERFORMANCE EVALUATION		

AVAILABLE FROM: NOT AVAILABLE
REPORT NUMBER: ARP800801

SPONSORS: DEFENSE SUPPLY SERVICES, WASHINGTON, DC

DOCUMENT NUMBER: 4683 DOCUMENT DATE: 02/28/83 TYPE: TECHNICAL REPORT

FINAL TECHNICAL REPORT ON THE INTERMETRICS ADA DECSYSTEM-20 PROTOTYPE COMPILER MAINTENANCE PROJECT

BELMONT, P.A.

This report describes the incremental development of the intermetrics Ada* Prototype Compiler for the Dec System-20(IAPC-20). Background, goals and accomplishments of this project and its predecessors (coded in SIMULA) are outlined in the beginning of this report. How the compiler and run-time systems were built is discussed in depth. Software-engineering techniques used and problems encountered in the Prototype compilers are documented in this review of the project. Finally, the development of information related to the definition of the Ada programming language are discussed in this report. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

COMPILERS
SIMULA
SOFTWARE ENGINEERING TOOLS AND TECHNIQUES
MEMORY MANAGEMENT
PROTOTYPES

AVAILABLE FROM: NOT AVAILABLE
ORDER NUMBER: 4002
REPORT NUMBER: IR-MA-197

SPONSORS: DEFENSE ADVANCED RESEARCH PROJECTS AGENCY,ARLINGTON,VA

DOCUMENT NUMBER: 4684 TYPE: PAPER

THE PROGRAMMING LANGUAGE ADA

SHUMATE, KENNETH A.

This paper discusses the emergence of Ada* and presents an overview of the language. The paper highlights capabilities that do not exist in most major languages and briefly discusses the development of the Ada Programming Support Environment (APSE). (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

LANGUAGE STRUCTURE
EXCEPTION HANDLING
SOFTWARE TOOL SYSTEMS

DOCUMENT NUMBER: 4685 TYPE: PAPER

PARALLELISM IN ADA: PROGRAM DESIGN AND MEANING

MAYOH, BRIAN

This paper presents a programming methodology and gives a precise definition of the Ada* form of parallelism. The author uses an example of producers and consumers, communicating through a postbox, to illustrate the design method. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

DISTRIBUTED PROCESSING
PROGRAMMING TECHNIQUES/METHODOLOGIES

AVAILABLE FROM: THE AUTHOR

DOCUMENT NUMBER: 4686 TYPE: PAPER

USING ADA FOR COMMERCIAL SOFTWARE

GARDNER, MICHAEL R.

This paper discusses observations resulting from Intellimac's experiences with the use of Ada* on a payroll system and a system of order-entry with inventory control. The author discusses his experiences with packages, strong typing, enumeration types, attributes, and exceptions. The impact of packages and programmer productivity is also described. The author includes a section that describes Intellimac's experience in learning the Ada language. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

DATA TYPES EXCEPTION HANDLING PROGRAMMER PRODUCTIVITY
EDUCATION

AVAILABLE FROM: THE AUTHOR

DOCUMENT NUMBER: 4687 TYPE: PAPER

CAN ADA REPLACE FORTRAN FOR NUMERICAL COMPUTATIONS?

MORRIS, ALFRED H., JR.
ACM SIGPLAN NOTICES, VOL 16, ISSUE 12, 4 P., 12/81

This paper discusses those constructs of Ada* which are pertinent to general numeric scientific computation and those that are considered defective. It is noted that the array defects are exceptionally critical, not providing needed capabilities that exist in FORTRAN. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

FORTRAN LANGUAGE EVALUATION NUMERICAL MANIPULATION

AVAILABLE FROM: THE AUTHOR

DOCUMENT NUMBER: 4688 TYPE: TECHNICAL REPORT

REPORT OF SUBCOMMITTEE ON STRAWMAN HOL REQUIREMENTS

STAFF AUTHOR

This report is a list of requirements for the common Department of Defense (DoD) High Order Language (HOL) called Ada*. The structure of the then-proposed language is reviewed. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

LANGUAGE DESIGN

AVAILABLE FROM: THE AUTHOR

DOCUMENT NUMBER: 4689 TYPE: JOURNAL ARTICLE

AN ADA PROGRAMMING SUPPORT ENVIRONMENT - THE ADA LANGUAGE SYSTEM

WOLFE, DR. MARTIN I.
JOVIAL LANGUAGE CONTROL FACILITY NEWSLETTER, VOL 4, ISSUE 3, PP. 6-7, 06/82

This article describes the basic priciples of the Ada* Language System (ALS) and provides the rationale behind them. The author provides an overview of such ALS elements as the tools the command language, the environment database, the configuration management tools and software library management system, the Ada compiler, and the linkers. The author also briefly reviews the Kernel Ada Programming Support Environment (KAPSE) and its tool interface. The last sections of the article describes the development process for the ALS and concludes with a review of the aims of the ALS and the computer environments that the ALS is being hosted on. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS COMMAND LANGUAGES CONFIGURATION MANAGEMENT
COMPILERS LINKAGE EDITORS KERNEL
SOFTWARE LIBRARY MANAGEMENT SYSTEM

DOCUMENT NUMBER: 4690 TYPE: PAPER

OBJECT-ORIENTED DESIGN

BOOCH, GRADY

This paper describes an object-oriented design methodology that uses Ada* as the implementation language. The author first briefly describes the software crisis. Then, the methodology for object-oriented design is presented and language constructs necessary for using such a methodology are discussed. Finally, an example of the methodology with Ada as the implementation language is described. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

DESIGN METHODOLOGIES

AVAILABLE FROM: THE AUTHOR

DOCUMENT NUMBER: 4692 DOCUMENT DATE: 05/30/83 TYPE: TECHNICAL REPORT

TECHNICAL SUPPORT SERVICES FOR THE ADA* JOINT PROGRAM OFFICE

SZWEDO, EDWARD J.

This report provides a detailed summary of the Ada* related activities carried out, products produced, and services provided during the period 28 May 1982 through 30 May 1983. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

TECHNOLOGY TRANSFER

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA

SPONSORS: ROME AIR DEVELOPMENT CENTER, GAFB, ROME, NY 13441

DOCUMENT NUMBER: 4716 TYPE: PAPER

SYSTEM COMPOSITION AND VERSION CONTROL FOR ADA

HABERMANN, A. NICO; PERRY, DEWAYNE E.
SOFTWARE ENG ENVIRONMENTS,PROCEEDINGS OF THE SYMPOSIUM, PP. 331-343, 1981

This paper presents the System Version Control Environment (SVCE), discusses motivations that led to its current state, describes an Ada*-like language to depict systems and versions, delineates desirable properties of system component and version descriptions, and illustrates the interaction between SVCE and its users. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS MODULARITY

AVAILABLE FROM: ELSEVIER NORTH-HOLLAND INC,52 VANDERBILT AV,NY 10017

SPONSORS: U.S.ARMY, CENTACT/CORADCOM, FT. MONMOUTH, NJ07703

DOCUMENT NUMBER: 4718 TYPE: BIBLIOGRAPHY

SOFTWARE ENGINEERING ENVIRONMENTS - A BIBLIOGRAPHY

HAUSEN, HANS-LUDWIG; MULLERBURG, MONIKA; RIDDLE, WILLIAM E.

The cited articles in this bibliography concern software development environments, that is, collections of tools which provide some facilitating context in which development practitioners may carry out their work. The emphasis is upon collections rather than individual tools. Each citation provides the author(s), title, source of publication, and the software engineering environment discussed. Some of the systems listed with the citations include the Ada* Programming Support Environment (APSE), UNIX**, Smalltalk, AIDES, COSY, GYPSY, SARA, and CADES. An author index is provided, as well as an index to the software engineering environments. (*Ada is a trademark of the U.S. Department of Defense. **UNIX is a trademark of Bell Laboratories).

INDEX TERMS

SOFTWARE TOOL SYSTEMS UNIX
DEVELOPMENTAL TOOLS AND TECHNIQUES
DESIGN TOOLS AND TECHNIQUES
MAINTENANCE TOOLS AND TECHNIQUES
SPECIFICATION TOOLS AND TECHNIQUES
VERIFICATION TOOLS AND TECHNIQUES AUTOMATED TESTING
SMALL TALK

AVAILABLE FROM: ELSEVIER NORTH-HOLLAND INC,52 VANDERBILT AV,NY 10017

SPONSORS: NASA LANGLEY RESEARCH CENTER,HAMPTON,VA 23665

DOCUMENT NUMBER: 4736 TYPE: PAPER

ALPAGE: A SOFTWARE ENGINEERING ENVIRONMENT FOR LARGE SCALE APPLICATIONS

ROUBINE, OLIVER; GART, MITCHELL B.; MINOT, REGIS
COMPCON '83, PP. 190-194, 03/03/83

This paper describes the ALPAGE project which is aimed at the definition of a basic software engineering environment that can be used to integrate, in a homogeneous way, a number of software tools to support the entire life cycle. The authors point out the similarities between several aspects of ALPAGE and the Stoneman requirements of the Ada* programming language. An overview is given of the functions, mechanisms and tools of ALPAGE. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

MODULARITY SOFTWARE TOOL SYSTEMS COMMAND LANGUAGES

AVAILABLE FROM: COMPUTER SOCIETY PRESS
ORDER NUMBER: 83CH1856-4

SPONSORS: AGENCY POUR LE DEVELOPMENT DE L'INFORMATION

DOCUMENT NUMBER: 4747 TYPE: PAPER

THREE ADA* EXAMPLES

WHITAKER, COL. W.A.
COMPCON '83, PP. 355-359, 03/03/83

This paper presents an historical view of three different software projects using Ada*: a very early embedded missile system, a numeric utility system, and the development of programmer tools. Lessons learned on each project and specific advice is given. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

EMBEDDED COMPUTER SYSTEMS
WEAPONS SYSTEMS APPLICATIONS
BALLISTIC MISSILE DEFENSE
FORTRAN
NUMERICAL MANIPULATION
SOFTWARE TOOL SYSTEMS

AVAILABLE FROM: COMPUTER SOCIETY PRESS
ORDER NUMBER: 83CH1856-4

DOCUMENT NUMBER: 4748 TYPE: PAPER

PRODUCTIVITY ISSUES IN THE ADA* LANGUAGE SYSTEM

BABICH, WAYNE A.
COMPCON '83, PP. 360-362, 03/03/83

This paper presents those capabilities of the Ada* Language System (ALS) which improve productivity by decreasing the effort required to track and organize the components of software under construction, and by minimizing errors and regressions induced by mistakes in intra-team coordination. The author identifies those building blocks of project coordination which underlie a configuration control strategy. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SOFTWARE TOOL SYSTEMS PRODUCTIVITY CONFIGURATION MANAGEMENT

AVAILABLE FROM: COMPUTER SOCIETY PRESS
ORDER NUMBER: 83CH1856-4

SPONSORS: U.S.ARMY COMM-ELECTRONICS CMD(CECOM), FT. MONMOUTH, NJ

DOCUMENT NUMBER: 4752 TYPE: PAPER

DDM: AN ADA COMPATIBLE DISTRIBUTED DATABASE MANAGER

CHAN, ARVOLA; DAYAL, UMESHWAR; FOX, STEPHEN; GOODMAN, NATHAN; RIES, DANIEL; SKEEN, DALE
COMPCON '83, PP. 422-425, 03/03/83

This paper provides an overview of the Distributed Database Manager (DDM) and the ADAPLEX database language, which is based on Ada* and DAPLEX. The authors provide an overview of the language interfaces, system functionalities, conceptual architecture, and novel design features of the DDM. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

DATABASE MANAGEMENT SYSTEMS ARCHITECTURE
RECOVERY

AVAILABLE FROM: COMPUTER SOCIETY PRESS
ORDER NUMBER: 83CH1856-4

DOCUMENT NUMBER: 4777 TYPE: TECHNICAL REPORT

ADA PROGRAMMING DESIGN LANGUAGE SURVEY

STAFF AUTHOR, SOFTECH,INC.,4130 LINDEN AVE.,DAYTON OH 45432

This report deals with a study of the various Ada-based* design methodologies that have been published. The authors analyze each for applicability as a program design language (PDL). Twenty-five separate companies and individuals were contacted who are performing Ada-related work. Of those contacted, fifteen companies responded with descriptions of non-PDL Ada related design projects and four companies provided sufficient material in time to be evaluated and classified as an Ada PDL. The report provides a discussion of the various efforts surveyed and compares the Ada PDLs to the Ada language. As a result of the study effort, the authors recommended that no single PDL description be chosen for use, but rather that the Navy adopt guidelines for the development of Ada PDLs. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

PROGRAM DESIGN LANGUAGE (PDL) EMBEDDED LANGUAGES
DESIGN METHODOLOGIES LANGUAGE EVALUATION

AVAILABLE FROM: THE AUTHOR

DOCUMENT NUMBER: 4786 TYPE: SPECIFICATION

AN ATTRIBUTE GRAMMAR FOR THE SEMANTIC ANALYSIS OF ADA

UHL, JORGEN; DROSSOPOULOU, SOPHIA; PERSCH, GUIDO; DAUSMANN, MANFRED; WINTERSTEIN, GEORG; KIRCHGASSNER, WALTER; GOOS, GERHARD

This document describes the development of an attribute grammar for Ada*. The document contains a survey of the tasks of semantic analysis within a front-end, the use of attribute grammars for the specification of static semantics and semantic analysis, and the procedure for writing the attribute grammar. The three main tasks of semantic analysis are then described, the main attributes are introduced, their use, their dependencies and their types are outlined. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

MODULARIZATION SPECIFICATIONS

AVAILABLE FROM: SPRINGER-VERLAG, INC., NEW YORK NY 10010

SPONSORS: BUNDESAMT FUR WEHRTECHNIK UND BESCHAFFUNG,KOBLENZ,GER.

DOCUMENT NUMBER: 4787 TYPE: TEXT

TOWARDS A FORMAL DESCRIPTION OF ADA

BJORNER, D.; OEST, O. N.

This book consists of five papers. The first paper outlines the specific development methods used in a large scale, full Ada* compiler and run-time system development project. The basis for the compiler is two fold: first a formal denotational and abstract semantics specification of Ada, including tasking; then an abstract compiling algorithm derived from the dynamic semantics specification from Ada into A-code. The second paper covers the denotational semantics-like method for defining the statically decidable context conditions that Ada programs must satisfy. The third paper gives a formal denotational dynamic semantics definition of sequential parts of Ada. It describes the "meaning" of Ada constructs by state-to-state transformations on an abstract machine. The fourth paper tackles and solves the problem of modelling all of th Ada tasking semantics as abstractly as possible and of embedding its parallel meta-process model in an otherwise denotational model of sequential Ada. The fifth paper formally defines a virtual machine. The design of the instruction set and state components of the machine is based on a semantic analysis of the basic concepts of Ada. The result is a high-level machine especially suited to run Ada programs. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

METALANGUAGES COMPILERS
MODELLING AND SIMULATION TOOLS TRANSFORMATION
DATA SEMANTICS VIRTUAL MACHINES

DOCUMENT NUMBER: 4788 DOCUMENT DATE: 02/28/83 TYPE: TECHNICAL REPORT

DIANA REFERENCE MANUAL

GOOS, GERHARD; WULF, WM. A.

This document describes Diana, a Descriptive Intermediate Attributed Notation for Ada*, being both an introduction and reference manual for it. DIANA is an abstract data type such that each object of the type is a representation of an intermediate form of an Ada program. Although the initial uses of this form were for communication between the Front and Back Ends of an Ada compiler. It is also intended to be suitable for use with other tools in an Ada programming environment. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

LANGUAGE STRUCTURE	LANGUAGE DESIGN	DATA TYPES
SOFTWARE TOOL SYSTEMS	COMPILERS	TRANSLATORS

AVAILABLE FROM: DATA & ANALYSIS CENTER FOR SOFTWARE (DACS)

SPONSORS: DEFENSE ADVANCED RESEARCH PROJECTS AGENCY,ARLINGTON,VA

DOCUMENT NUMBER: 4789 DOCUMENT DATE: 02/22/83 TYPE: TECHNICAL REPORT

A DIANA-DRIVEN PRETTY-PRINTER FOR ADA

BUTLER, KENNETH J.; EVANS, ARTHUR JR.

This report presents the design of PRETTYPRINT, a program designed to accept as input a DIANA representation of an Ada* program and to produce as output a properly formatted textual version of the same Ada program. This document specifies in detail the design (but not the implementation) of PRETTYPRINT. It presents in detail the issues involved in source reconstruction, ignoring temporarily the problem of formatting: it then addresses the issues involved in implementing pleasing formatting decisions. Finally, the report shows how the solutions to these two problems are implemented. Four appendices present detail of the modules that carry out the work. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

PROGRAM DESIGN	DATA TYPES	AUTOMATED DOCUMENTATION
PROGRAMMING AIDS		

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
REPORT NUMBER: TL83-3

SPONSORS: ADA JT. PROG. OFF., ARLINGTON, VA 22209

DOCUMENT NUMBER: 4790 DOCUMENT DATE: 12/82 TYPE: DISSERTATION

ADAPAR: AN ADA RECOGNIZER

URE, WILLIAM R.

This thesis involved the development of a top down recursive descent Ada* recognizer. The recognizer accepts syntactically valid Ada programs and rejects those that are not. Basic concepts of compiler theory as they relate to syntax analysis were reviewed. Uses for the recognizer as a programmer's tool are discussed. The steps necessary to transform the recognizer into a compiler are provided. The host machine for the Ada recognizer is the DEC System-10. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SYNTAX GRAPHS	COMPILERS	TRANSFORMATION
LANGUAGE STRUCTURE	TOP DOWN DEVELOPMENT	STRUCTURED PROGRAMMING
STATIC ANALYSIS		

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: AD A124769
REPORT NUMBER: AFIT/GCS/MA/820-11

DOCUMENT NUMBER: 4791 DOCUMENT DATE: 12/82 TYPE: DISSERTATION

A SYNTAX-DIRECTED PROGRAMMING ENVIRONMENT FOR THE ADA PROGRAMMING LANGUAGE

FERGUSON, SCOTT E.

This document describes the design and implementation of a programming support environment for the ADA* language based on a syntax-directed editor and a program tree structure. Though the prototype compiler is limited to a small subset, the full ADA language is supported by the remainder of the environment. Most of the environment is driven by a language syntax description, and is therefore capable of processing virtually any programming language. The prototype syntax-directed environment demonstrates the ability to reduce programmer idle time during development by eliminating parsing and lexical analysis in the compiler. The program tree structure also allows for the development of superior programming environment tools. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

METALANGUAGES	PROTOTYPES	PROGRAMMING
COMPILERS	EMBEDDED LANGUAGES	
STRUCTURED PROGRAMMING LANGUAGE		ADA TOOL ENVIRONMENT

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: AD A124843
REPORT NUMBER: AFIT/GCS/MA/82D-1

DOCUMENT NUMBER: 4792 TYPE: JOURNAL ARTICLE

CONCEPTS AND NOTATIONS FOR CONCURRENT PROGRAMMING

ANDREWS, GREGORY R.; SCHNEIDER, FRED B.
ACM COMPUTING SURVEYS, VOL 15, ISSUE 1, PP. 3-43, 03/83

This article describes the concepts central to the design and construction of concurrent programs and explores notations for describing concurrent computations. The authors restrict attention to those concurrent programming languages whose designs they believe to be influential or conceptually inovative. The authors first discuss the three issues that underlie all concurrent programming notations: how to express concurrent execution, how processes communicate, and how processes synchronize. The authors then take a closer look at various ways to specify concurrent execution: coroutines, fork and cobegin statements, and process declarations. The authors also discuss synchronization primitives that are used when communication uses shared variables. Two general types of synchronization are considered - exclusion and condition synchronization - and a variety of ways to implement them are described. Brief discussions of languages such as MODULA, Concurrent Pascal, and Ada* are also included. The authors also identify and compare three general classes of concurrent programming languages. Finally, the authors summarize the major topics and identify directions in which the field is headed. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

PROGRAMMING TECHNIQUES/METHODOLOGIES		COROUTINES
MONITORS	SYNCHRONIZATION	CONCURRENT PROGRAMMING
PROCESS	CONCURRENT PASCAL	MODULA

SPONSORS: NATIONAL SCIENCE FOUNDATION

DOCUMENT NUMBER: 4796 TYPE: JOURNAL ARTICLE

STRATEGY FOR A DOD SOFTWARE INITIATIVE

MARTIN, EDITH W.
COMPUTER, VOL 16, ISSUE 3, PP. 52-59, 03/83

This article describes the Department of Defense's (DoD's) motivation for establishing the software initiative and reviews its goal and objectives. In discussing the initiative, the author explains how it will become an extension of the Very High Speed Integrated Circuits (VHSIC) and Ada* programs. The implementation of the initiative is reviewed and the Software Technology for Adaptable, Reliable Systems (STARS) program is introduced. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

COST	SOFTWARE ENGINEERING TOOLS AND TECHNIQUES	
REUSABILITY	TECHNOLOGY TRANSFER	MANAGEMENT

DOCUMENT NUMBER: 4817 TYPE: PAPER

SOFTWARE DESIGN AND DEVELOPMENT USING MASCOT

DIBBLE, R.
AGARD CONFERENCE PREPRINT, VOL 330, PP. 74-88, 08/82

This paper discusses the MASCOT methodology, which was developed to contain increasing software costs and ensure the production of reliable software. The experiences in using MASCOT are discussed. The advantages and disadvantages of MASCOT are discussed and related to avionic software requirements. The relevance of the design philosophy to the imminent arrival of Ada* is considered. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

DEVELOPMENT	DESIGN	MODULARITY

AVAILABLE FROM: NATL.TECHNCL INF.SVC.5285 PORT ROYAL RD,SPRINGFIELD,VA
ORDER NUMBER: NASA-TM84546

DOCUMENT NUMBER: 4831 DOCUMENT DATE: 02/10/80 TYPE: PAPER

RESOLVING OVERLOADED EXPRESSIONS IN ADA

RUNCIMAN, COLIN

The form of overloading introduced in the Ada language design is innovative and has been viewed (in the Preliminary Rationale for example) as a knotty problem for the translator. In this paper the overload resolution requirements are summarized and reviewed. The solutions offered in several published papers are examined and reformulated so as to allow a comparative analysis of their techniques to be made. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

TRANSLATORS	PROGRAMMING TECHNIQUES/METHODOLOGIES

AVAILABLE FROM: U. OF YORK, COMPUTER SCIENCE DEPARTMENT
REPORT NUMBER: YORK COMP. SCI.RPT NO.35

DOCUMENT NUMBER: 4832 DOCUMENT DATE: 07/12/82 TYPE: TECHNICAL REPORT

ADA SYSTEM SPECIFICATION FOR ADA INTEGRATED ENVIRONMENT TYPE A

STAFF AUTHOR, INTERMETRICS,INC.,CAMBRIDGE,MA 02138

This specification establishes the performance, design, development and test requirements for the Ada* Integrated Environment (AIE). The following topics are discussed: (1) Applicable documents; (2) Requirements; (3) Quality Assuranc Provisions and (4) Preparation for Delivery. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

QUALITY ASSURANCE	DESIGN TOOLS AND TECHNIQUES
TEST METHODOLOGIES	ADA TOOL ENVIRONMENT

AVAILABLE FROM: THE AUTHOR
REPORT NUMBER: IR-676-1

SPONSORS: ROME AIR DEVELOPMENT CENTER, GAFB, ROME, NY 13441

DOCUMENT NUMBER: 4833 DOCUMENT DATE: 03/13/81 TYPE: TECHNICAL REPORT

COMPUTER PROGRAM DEVELOPMENT SPECIFICATION FOR ADA INTEGRATED ENVIRONMENT: MAPSE GENERATION AND SUPPORT TYPE B5

MARTIN, FRED H. DR.

This specification defines the requirements for Minimal Ada* Programming Support Environment (MAPSE) Generation and Support (MGS). The functional area identified by the term MGS consists of those elements used in the construction, maintenance, and rehosting of MAPSE tools. MGS is the means by which MAPSE tools are constructed and maintained in a consistent, reliable and portable form. Within this functional area, three sub-areas are defined: (1) Text Parsing; (2) Data Management; and (3) Initial Tool Construction. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

ADA TOOL ENVIRONMENT	QUALITY ASSURANCE	PROGRAM LIBRARY SYSTEMS
AUTOMATED TESTING		

AVAILABLE FROM: THE AUTHOR
REPORT NUMBER: IR-680

SPONSORS: ROME AIR DEVELOPMENT CENTER, GAFB, ROME, NY 13441

DOCUMENT NUMBER: 4834 DOCUMENT DATE: 03/13/81 TYPE: TECHNICAL REPORT

COMPUTER PROGRAM DEVELOPMENT SPECIFICATION FOR ADA INTEGRATED ENVIRONMENT: MAPSE TEXT EDITOR TYPE B5

STAFF AUTHOR, INTERMETRICS,INC.,CAMBRIDGE,MA 02138

This specification establishes the requirements for the MAPSE Text Editor. The Text Editor provides basic editing facilities suitable for editing general text such as program source or program documentation. The MAPSE Text Editor provides a framework within which different kinds of structured and unstructured text may be edited. It must interface with the file system and the general Kernel Ada* Programming Support Environment (KAPSE) on the one hand and the user on the other. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

TEXT-PROCESSING APPLICATIONS SOFTWARE TOOL SYSTEMS
EDITORS ADA TOOL ENVIRONMENT

AVAILABLE FROM: THE AUTHOR
REPORT NUMBER: IR-683

SPONSORS: ROME AIR DEVELOPMENT CENTER, GAFB, ROME, NY 13441

DOCUMENT NUMBER: 4837 DOCUMENT DATE: 03/22/83 TYPE: TECHNICAL REPORT

COMPUTER PROGRAM DEVELOPMENT SPECIFICATION FOR ADA INTEGRATED ENVIRONMENT: PROGRAM INTEGRATED FACILITIES TYPE B5

STAFF AUTHOR, INTERMETRICS,INC.,CAMBRIDGE,MA 02138

This document establishes the performance, design, test, and qualification requirements for the Program Integration Facilities (PIF) for the Ada* Integrated Environment. These facilities include the Program Library Interface Packages, the Program Builder and the Program Library Support Tools. This document also includes requirements for the design of the Ada program library, the environment within which program integration occurs. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

ADA TOOL ENVIRONMENT PROGRAM LIBRARY SYSTEMS AUTOMATED TESTING
PROGRAM SYNTHESIS

AVAILABLE FROM: THE AUTHOR
REPORT NUMBER: IR-681-1

SPONSORS: ROME AIR DEVELOPMENT CENTER, GAFB, ROME, NY 13441

DOCUMENT NUMBER: 4838 DOCUMENT DATE: 08/04/83 TYPE: TECHNICAL REPORT

COMPUTER PROGRAM DEVELOPMENT SPECIFICATION FOR ADA INTEGRATED ENVIRONMENT: PROGRAM INTEGRATED FACILITIES TYPE B5

STAFF AUTHOR, INTERMETRICS,INC.,CAMBRIDGE,MA 02138

This document is an update to IR681-1 Computer Program development specification for Ada* Integrated Environment: Program Integration Facilities TYPE; B5-AIE(1).PIF(1). It establishes the performance, design, test, and qualificatio requirements for the Program Integration Facilities (PIF) for the Ada Integrated Environment. These facilities include the Program Library Interface Packages, the Program Builder and the Program Library Support Tools. This document also includes requirements for the design of the Ada program library, the environment within which program integration occurs. (*Ada is a trademark o the U.S. Department of Defense).

INDEX TERMS

ADA TOOL ENVIRONMENT PROGRAM LIBRARY SYSTEMS AUTOMATED TESTING
PROGRAM SYNTHESIS

AVAILABLE FROM: THE AUTHOR
REPORT NUMBER: IR-681-2

SPONSORS: ROME AIR DEVELOPMENT CENTER, GAFB, ROME, NY 13441

DOCUMENT NUMBER: 4840 DOCUMENT DATE: 06/22/82 TYPE: TECHNICAL REPORT

COMPUTER PROGRAM DEVELOPMENT SPECIFICATION FOR ADA INTEGRATED ENVIRONMENT: MAPSE GENERATION AND SUPPORT TYPE B

MARTIN, FRED H.

This document is an update to IR-680-1 Computer Program Development Specificatio for Ada* Integrated Environment: MAPSE Generation and Support TYPE B5. This specification defines the requirements for MAPSE Generation and Support (MGS). The functional area identified by the term MGS consists of those elements used in the construction, maintenance, and rehosting of MAPSE tools. MGS is the mean by which MAPSE tools are constructed and maintained in a consistent, reliable, and portable form. Within this functional area, three sub-areas are defined: (1) Text Parsing; (2) Data Management; and (3) Initial Tool Construction. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

ADA TOOL ENVIRONMENT QUALITY ASSURANCE PROGRAM LIBRARY SYSTEMS
AUTOMATED TESTING

AVAILABLE FROM: THE AUTHOR
REPORT NUMBER: IR-680-1

SPONSORS: ROME AIR DEVELOPMENT CENTER, GAFB, ROME, NY 13441

DOCUMENT NUMBER: 4841 TYPE: PAPER

THE KAPSE FOR THE ADA LANGUAGE SYSTEM

THALL, RICHARD M.

This paper presents details of the Kernel Ada* Programming Support Environment (KAPSE) used in the Army's Ada Language System (ALS). The services provided by the ALS KAPSE are described in terms of the Ada packages that supply these services. The rationale for some major design decisions is discussed. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

PORTABILITY ADA TOOL ENVIRONMENT CONFIGURATION MANAGEMENT

AVAILABLE FROM: THE AUTHOR

SPONSORS: U.S.ARMY

DOCUMENT NUMBER: 4843 DOCUMENT DATE: 11/12/82 TYPE: TECHNICAL REPORT

SYSTEM SPECIFICATION FOR ADA INTEGRATED ENVIRONMENT TYPE A

STAFF AUTHOR, INTERMETRICS,INC.,CAMBRIDGE,MA 02138

This specification is an update to IR-672-1 dated, 12 July 1982. It establishes the performance, design, development and test requirements for the Ada* Integrat Environment (AIE), an integrated set of software tools designed to support the development and maintenance of software written in the Ada Programming Language. This document includes the following topic: Applicable documents, requirements, Quality Assurance Provisions and Preparation for delivery. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

QUALITY ASSURANCE	DESIGN TOOLS AND TECHNIQUES
TEST METHODOLOGIES	ADA TOOL ENVIRONMENT

AVAILABLE FROM: THE AUTHOR
REPORT NUMBER: IR-676-2

SPONSORS: ROME AIR DEVELOPMENT CENTER, GAFB, ROME, NY 13441

DOCUMENT NUMBER: 4867 TYPE: JOURNAL ARTICLE

PROTOTYPING IN ADA: A CASE STUDY

DUNCAN, ARTHUR G.
SOFTWARE ENGINEERING NOTES (ACM SIGSOFT), VOL 7, ISSUE 5, PP. 54-60, 12/82

Prototypes provide a means for obtaining rapid feedback concerning the design of a system. Ideally, a prototype system should be easy to implement and modify moreover, it should implement enough of the system's functionality to allow an evaluation of the design. The Ada* programming language, with emphasis on modularity and well-defined module interfaces, appears suitable for implementing prototype systems. This paper describes how one could develop a prototype in Ada for a small real-time control program and then successively enhance the prototype to produce the final production version. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

EMBEDDED COMPUTER SYSTEMS	PROTOTYPES

DOCUMENT NUMBER: 5141 TYPE: JOURNAL ARTICLE

FORTRAN 77 AND STRUCTURED DESIGN

ELLIOTT, D.G.
ACM SIGPLAN NOTICES, VOL 16, ISSUE 12, PP. 7-9, 12/81

This article describes the deficiences facing a programmer using Fortran 77. It also points out that these problems would not occur if the programmer used Ada* packages to code the examples given in this article. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

STRUCTURED DESIGN	FORTRAN	SOFTWARE TOOLS

COMPILERS

DOCUMENT NUMBER: 5143 TYPE: JOURNAL ARTICLE

A METHODOLOGY FOR MODULAR USE OF ADA

BEN-ARI, MORDECHAI; YEHUDAI, AMIRAM
ACM SIGPLAN NOTICES, VOL 16, ISSUE 12, PP. 22-26, 12/81

An introduction to the Ada* programming methodology is given in this article. It describes the following Ada modules: Real, floating point, fixed point, access, tasks, timed tasks, exception and representation specification. Core Ada is also discussed as it relates to program structuring. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

STRUCTURED PROGRAMMING LANGUAGE
PROGRAMMING TECHNIQUES/METHODOLOGIES
MODULARIZATION

DOCUMENT NUMBER: 5144 TYPE: JOURNAL ARTICLE

TYPES IN RED

VAN DEUSEN, MARY
ACM SIGPLAN NOTICES, VOL 16, ISSUE 12, PP. 27-38, 12/81

An account is given of the RED Language which was designed as a candidate for the Department of Defense common high-order language, Ada*. The first section of this article summarizes the design goals for the RED type system. The following sections discuss each of these design goals in greater depth. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

HIGHER-ORDER LANGUAGES
SOFTWARE TOOL SYSTEMS
LANGUAGE DESIGN

DOCUMENT NUMBER: 5147 TYPE: JOURNAL ARTICLE

VALUE RECEIVING PROCEDURES

MAYER, ALASTAIR J.W.
ACM SIGPLAN NOTICES, VOL 16, ISSUE 11, PP. 30-34, 11/81

The concept of value receiving procedures which are functions that may act as the target of an assignment statement is described and their utility discussed. The new keyword "receive" is suggested as an Ada* extension. Extensions are als suggested for Pascal and PL/I. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

FUNCTIONS
PASCAL
PL/I
DATA STRUCTURES

DOCUMENT NUMBER: 5148 TYPE: JOURNAL ARTICLE

THE IMPLEMENTATION OF FILE STRUCTURES IN SOME HIGH LEVEL LANGUAGES

INCE, DARREL C.
ACM SIGPLAN NOTICES, VOL 16, ISSUE 11, PP. 49-55, 11/81

With the growing use of Pascal, and the projected large scale use of Ada*, the time will come when applications requiring sophisticated file processing will use these languages. This paper is an attempt to outline how structures such as indexed sequential files and hashed files can be implemented in recent languages such as Ada, Pascal and Algol 68. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

FILE MANAGEMENT SYSTEMS	PROGRAMMING TECHNIQUES/METHODOLOGIES
PASCAL	ALGOL

DOCUMENT NUMBER: 5153 TYPE: JOURNAL ARTICLE

A HUMAN ENGINEERED VARIANT OF BNF

LEDGARD, HENRY F.
ACM SIGPLAN NOTICES, VOL 15, ISSUE 10, PP. 57-62, 10/80

In this article the BNF variant conventions are discussed. The BNF variant was inspired by the Preliminary Ada* Reference Manual. Examples are given of conventional BNF Description, the BNF Variant and using multiple typing fonts. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

PROGRAMMING AIDS	LANGUAGE DESIGN

DOCUMENT NUMBER: 5155 TYPE: JOURNAL ARTICLE

COMMENTS ON THE SUGGESTED IMPLEMENTATION OF TASKING FACILITIES IN THE "RATIONALE FOR THE DESIGN OF THE ADA PROGRAMMING LANGUAGE"

TAI, KUO-CHUNG; GARRARD, KEN
ACM SIGPLAN NOTICES, VOL 15, ISSUE 10, PP. 76-84, 10/80

This paper points out errors and omissions in the suggested implementation of tasking facilities in the "Rationale for the Design of the Ada* Programming Language." (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

PROGRAM DESIGN METHODOLOGIES	IMPLEMENTATION

DOCUMENT NUMBER: 5258 TYPE: JOURNAL ARTICLE

CLASSICAL OPTIMIZATIONS IN ADA

DAVIS, MARK
ACM ADA LETTERS, VOL 1, ISSUE 2, PP. 11-14, 09/81

Ada* contains several features which have posed problems for optimizers when included in other languages. These features are subprograms, exception handling, and multi-tasking. They are defined in Ada in such a way that classical optimizations, such as common sub-expression elimination and code motion, are minimally affected. This paper discusses the impact of Ada's semantics on classical optimizations and the information needed for the correct application of theses transformations. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

OPTIMIZERS

DOCUMENT NUMBER: 5277 TYPE: PAPER

INTERACTIVE MODELING AND SIMULATION OF TRANSACTION FLOW OR NETWORK MODELS USING THE ADA SIMULATION SUPPORT ENVIRONMENT

ADELSBERGER, HEIMO H.
PROCEEDINGS OF THE 1983 WINTER SIMULATION CONFERENCE, 9 P.

The Ada* Simulation Support Environment (ASSE) is a software system, designed to support the development and maintenance of simulation models written in Ada throughout their life cycle. This article describes the transaction flow or network part of the ASSE, which allows to build models like in GPSS or SLAM. The view given in this article of the models is slightly different from that of the above mentioned languages, which is demonstrated in detail by the server/ resource process. The design stresses modular top-down development using submodels. Models can be developed and tested interactively. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

ADA TOOL ENVIRONMENT STRUCTURED PROGRAMMING TOP DOWN DEVELOPMENT
MODELLING AND SIMULATION TOOLS

AVAILABLE FROM: IEEG CONFERENCE SERVICES 345 E. 47TH ST., NY,NY 10017

DOCUMENT NUMBER: 5278 TYPE: PAPER

A STRUCTURED AND MODULAR APPROACH TO TRANSACTION FLOW MODELS

ADELSBERGER, HEIMO H.
PROCEED. OF THE 1983 SUMMER COMPUTER SIMULATION CONF., PP. 551-556

This article presents the transaction flow or network part of the Ada* Simulation Support Environment. It enables one to simulate models similar to GPSS and Q-GERT (SLAM). The design stresses modular top-down development using subnetworks and generic subnetworks. The network part of the ASSE is well supported by the interactive model design and verification packages: The model can be developed interactively on the screen. A running model can be tested graphically. The simulation can be interrupted at any time, and all information about the nodes, queues, entities and global variables can be displayed and changed, if desired. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

ADA TOOL ENVIRONMENT TOP DOWN DEVELOPMENT STRUCTURED PROGRAMMING
MODELLING AND SIMULATION TOOLS

AVAILABLE FROM: ELSEVIER NORTH-HOLLAND INC,52 VANDERBILT AV,NY 10017

DOCUMENT NUMBER: 5279 TYPE: PAPER

MODELING AND SIMULATION IN ADA

ADELSBERGER, HEIMO H.
FIRST EUROPEAN SIMULATION CONGRESS, PP. 273-280

In this paper the Ada* language is discussed. A short survey is given of the history of Ada and the main design goals of the language is presented. Ada is compared with some other general programming languages and with specific simulation languages. The advances of Ada are investigated for a simulation support environment in the form of a package system. Ada is analyzed in the context of different simulation approaches or world views. Finally discussed is how a simulation language could be defined on top of Ada and a simple example is given for such an extension. (*Ada is a trademark of the U.S. Department of Defense).

INDEX TERMS

SIMULATION LANGUAGES	FORTRAN	PASCAL
MODELLING AND SIMULATION TOOLS		SIMSCRIPT

AVAILABLE FROM: SPRINGER-VERLAG, INC., NEW YORK NY 10010

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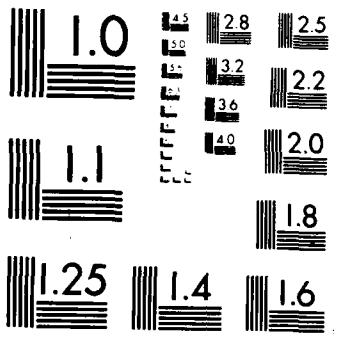
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